DECEMBER 1978 Number 412 -- Part A

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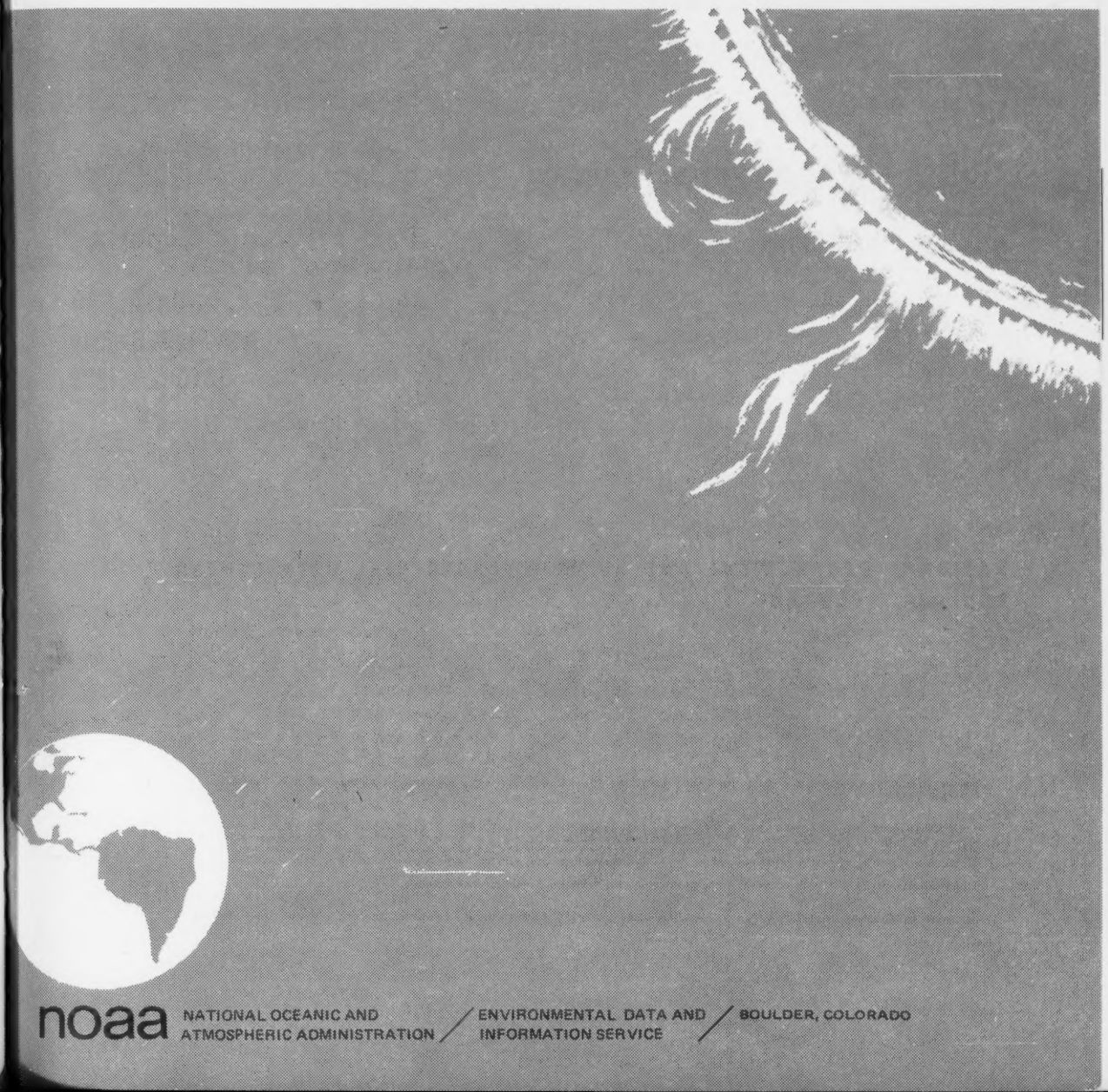
Solar-Geophysical Data prompt reports

Data for November 1978 -- October 1978

Explanation of Data Reports Issued as Number 402 (Supplement) February 1978



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Solar - Geophysical Data

NO. 412 DECEMBER 1978

Part I (Prompt Reports)

DATA FOR
NOVEMBER 1978
OCTOBER 1978

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To standardize referencing these reports in the open literature, the following format is recommended:

Solar-Geophysical Data, 412 Part I (or Part II), pages, December 1978, U.S. Department of Commerce, (Boulder, Colorado, U.S.A. 80303).

SOLAR-GEOPHYSICAL DATA

No. 412

Issued in two parts

Helen E. Coffey, Editor

J. Virginia Lincoln, Chief
Solar-Terrestrial Physics Division

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----- = no data available.
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ALERT PERIODS

INTERNATIONAL URSIGRAM
AND WORLD DAYS SERVICE

NOVEMBER 1978

SUMMARY OF THE GEOALERT WWA MESSAGES

Message serial number	Date of issue	Date of observation	Wolf number	10 cm solar flux	A index	Active Regions Location Lat-Long	No. of Flares Total	M	X	Outstanding events	Forecasts Date	Location Lat-Long	Desc*	Alert Situations
305	1	31	156	146	16	S18W84	0	0	0		31	S18W84	Q	SOLNIL MAGQUIET
						N17W43	0	0	0			N17W43	Q	
						S17W36	0	0	0			S17W36	Q	
						N21W47	0	0	0			N21W47	Q	
						S13E08	0	0	0			S13E08	Q	
						N29E14	0	0	0			N29E14	Q	
						S11E18	0	0	0			S11E18	Q	
						S21E41	0	0	0			S21E41	Q	
						S29W79	0	0	0			S29W79	Q	
						N36W23	0	0	0			N36W23	Q	
						N05E41	0	0	0			N05E41	Q	
306	2	1	170	154	12	S13W05	0	0	0		1	S13W05	Q	SOLQUIET MAGQUIET
						N28E01	0	0	0			N28E01	Q	
						S11E05	0	0	0			S11E05	E	
						N18W56	0	0	0			N18W56	Q	
						S17W48	2	0	0			S17W48	Q	
						N21W62	1	0	0			N21W62	E	
						S23E31	5	0	0			S23E31	C,A	
						N34W42	0	0	0			N34W42	Q	
						N05E28	0	0	0			N05E28	Q	
						N14W06	0	0	0			N14W04	E	
307	3	2	207	162	08	N18W72	0	0	0		2	N18W72	Q	SOLQUIET MAGQUIET
						S17W60	0	0	0			S17W60	Q	
						N21W76	0	0	0			N21W76	Q	
						S13W19	0	0	0			S13W19	Q	
						S11W06	0	0	0			S11W06	Q	
						S25E22	0	0	0			S25E22	D,A	
						N14W19	2	0	0			N14W19	E	
						N27W00	0	0	0			N27W00	Q	
						S19E14	1	0	0			S19E14	D,A	
						S13E63	3	0	0			S13E63	E	
308	4	3	274	173	07	N18W84	0	0	0		3	N18W84	D,E	SOLALERT MAGQUIET
						S18W73	1	0	0			S18W73	D,E	
						S13W28	0	0	0			S13W28	Q	
						S11W20	0	0	0			S11W20	D,E	
						S25E08	5	0	0			S25E08	E	
						N14W33	0	0	0			N14W33	C,E	
						N27W14	0	0	0			N27W14	Q	
						S19E01	0	0	0			S19E01	E	
						S13E50	8	0	0			S13E50	C,E	
						S11W37	0	0	0			S11W37	Q	
						N11W20	0	0	0			N11W20	Q	
						N17E79	0	0	0			N17E79	D,E	
309	5	4	221	181	04	S18W87	0	0	0		4	S18W87	Q	SOLALERT PIANO MAGQUIET
						N31W59	0	0	0			N31W59	Q	
						S12E51	0	0	0			S12E51	Q	
						N14W47	0	0	0			N14W47	E	
						S14W42	0	0	0			S14W42	Q	
						S12W33	0	0	0			S12W33	Q	
						N12W33	0	0	0			N12W33	Q	
						N27W27	0	0	0			N27W27	Q	
						S19W13	0	0	0			S19W13	D,A	
						S24W03	0	0	0			S24W03	D,A	
						S13E36	2	0	0			S13E36	E	
						N17E68	0	0	0			N17E68	C,E	
310	6	5	134	184	05	S11W55	0	0	0		5	S11W55	Q	SOLALERT MAGQUIET
						S12W47	0	0	0			S12W47	Q	
						S25W15	1	0	0			S25W15	C,A	
						N14W58	0	0	0			N14W58	Q	
						N28W40	0	0	0			N28W40	Q	
						S19W26	0	0	0			S19W26	D,A	
						S13E22	1	0	0			S13E22	C,A	
						N17E57	1	0	0			N17E57	D,A	
						N32W72	0	0	0			N32W72	Q	
						S22E06	0	0	0			S22E06	Q	
311	7	6	186	179	03	S15W68	0	0	0		6	S15W68	Q	SOLALERT MAGQUIET
						S12W61	0	0	0			S12W61	Q	
						S25W28	1	0	0			S25W28	D,A	
						S19W39	2	0	0			S19W39	D,A	
						S12E09	5	0	0			S12E09	C,A	
						N18E43	1	0	0			N18E43	C,A	
						S22W07	0	0	0			S22W07	D,E	
						S19E76	0	0	0			S19E76	Q	
312	8	7	173	177	02	S14W83	0	0	0		7	S14W83	Q	SOLALERT MINOR 08/XX MAGQUIET
						S24W39	1	0	0			S24W39	Q	
						S19W52	4	0	0			S19W52	E	
						S12W03	4	0	0			S12W03	A	
						N18E29	2	0	0			N18E29	C,A	
						S22W21	0	0	0			S22W21	Q	
						S20E66	0	0	0			S20E66	Q	
						N14E46	0	0	0			N14E46	Q	
						N31E80	0	0	0			N31E80	Q	

ALERT PERIODS

INTERNATIONAL URSIGRAM
AND WORLD DAYS SERVICE

NOVEMBER 1978

SUMMARY OF THE GEOALERT WWA MESSAGES

Message serial number	Date of issue	Date of observation	Wolf number	10 cm solar flux	A index	Active Regions: Location Lat-Long	No. of Flares: Total	M	X	Outstanding events	Forecasts: Date	Location Lat-Long	Desc*	Alert Situations
313	9	8	153	180	11	S24W51	1	0	0		8	S24W51	Q	SOLALERT MINOR 09/09 MAGQUIET
						S18N64	3	0	0			S18W64	Q	
						S12W17	3	0	0			S12W17	A	
						N18E13	7	0	0			N18E13	A	
						S22W36	1	0	0			S22W36	Q	
						S21E53	0	0	0			S21E53	Q	
						N30E67	0	0	0			N30E67	Q	
						S18E42	0	0	0			S18E42	E	
						N18E22	0	0	0			N18E22	Q	
314	10	9	150	170	07	S24W63	1	0	0		9	S24W63	E	SOLALERT MINOR 10/10 MAGQUIET
						S13W30	6	0	0			S13W30	A	
						N18E01	1	0	0			N18E01	E	
						S21E38	0	0	0			S21E38	Q	
						N31E56	0	0	0			N31E56	Q	
						S19E02	0	0	0			S19E02	Q	
						N18E10	0	0	0			N18E10	Q	
						N24W35	0	0	0			N24W35	Q	
315	11	10	219	171	06	S25W74	0	0	0		10	S25W74	Q	SOLALERT MAGQUIET
						S13W43	6	1	0			S13W43	A	
						N18W11	5	1	0			N18W11	A	
						S26W64	0	0	0			S26W64	D,E	
						S21E25	0	0	0			S21E25	D,E	
						N31E42	0	0	0			N31E42	Q	
						S19W12	0	0	0			S19W12	Q	
						N19W03	0	0	0			N19W03	C,E	
						N24W47	0	0	0			N24W47	Q	
						N25E46	0	0	0			N25E46	Q	
316	12	11	150	166	07	S13W56	2	0	0	PROTON EVENT BEGAN 10/2130 UT. 20 PROTONS/cm²/sec/ ster at 10/2145 UT	11	S13W56	A	PROTON FLARE ALERT MAGALERT
						N19W25	7	0	0			N19W25	A	
						S21E12	0	0	0			S21E12	D,E	
						N30E27	0	0	0			N30E27	Q	
						N24E33	1	0	0			N24E33	D,A	
						N31W49	0	0	0			N31W49	D,E	
						S19E47	0	0	0			S19E47	D,E	
317	13	12	161	154	25	S14W72	0	0	0		12	S14W72	A	SOLALERT 13/XX MAGNIL
						N18W39	2	0	0			N18W39	A	
						S21E01	0	0	0			S21E01	Q	
						N30E13	0	0	0			N30E13	Q	
						N24E19	0	0	0			N24E19	Q	
						N31W64	0	0	0			N31W64	Q	
						S19E33	0	0	0			S19E33	Q	
						N24W00	0	0	0			N24W00	Q	
						N40E41	0	0	0			N40E41	Q	
318	14	13	112	146	18	S14W85	1	0	0		13	S14W85	D,A	SOLALERT MAGQUIET
						N19W52	7	0	0			N19W52	C,A	
						S21W13	0	0	0			S21W13	Q	
						N24E05	3	0	0			N24E05	E	
						N23W13	0	0	0			N23W13	Q	
						N40E28	0	0	0			N40E28	Q	
319	15	14	124	138	07	N19W65	0	0	0		14	N19W65	D,A	SOLNIL MAGQUIET
						S21W26	0	0	0			S21W26	Q	
						N24W23	0	0	0			N24W23	Q	
						N24W06	0	0	0			N24W06	E	
						S18E09	0	0	0			S18E09	Q	
						N39E17	0	0	0			N39E17	Q	
						N31E36	0	0	0			N31E36	Q	
						N16E67	0	0	0			N16E67	Q	
320	16	15	102	137	06	N19W79	4	0	0		15	N19W79	D,A	SOLQUIET MAGQUIET
						S21W40	0	0	0			S21W40	Q	
						N24W20	0	0	0			N24W20	E	
						N15E55	0	0	0			N15E55	Q	
						S18W14	0	0	0			S18W14	Q	
						N11W00	0	0	0			N11W00	Q	
						S17E81	0	0	0			S17E81	Q	
321	17	16	138	132	05	N19W92	1	0	0		16	N19W92	D,A	SOLQUIET MAGQUIET
						S20W52	1	0	0			S20W52	Q	
						N24W33	0	0	0			N24W33	Q	
						S18W18	0	0	0			S18W18	Q	
						N15E41	0	0	0			N15E41	Q	
						S17W28	0	0	0			S17W28	Q	
						N11W12	0	0	0			N11W12	Q	
						S17E68	0	0	0			S17E68	Q	
						S23E52	0	0	0			S23E52	E	
						S28E74	0	0	0			S28E74	Q	

ALERT PERIODS

INTERNATIONAL URSIGRAM
AND WORLD DAYS SERVICE

NOVEMBER 1978

SUMMARY OF THE GEOALERT WWA MESSAGES

Message serial number	Date of issue	Date of observation	Wolf number	10 cm solar flux	A index	Active Regions: Location Lat-Long	No. of Flares: Total	M	X	Outstanding events	Forecasts: Date	Location Lat-Long	Desc*	Alert Situations
322	18	17	147	131	06	S20W65	0	0	0		17	S20W65	Q	SOLQUIET MAGQUIET
						N24W47	0	0	0			N24W47	Q	
						S18W31	0	0	0			S18W31	Q	
						N15E27	0	0	0			N15E27	Q	
						S17W41	0	0	0			S17W41	Q	
						N11W27	0	0	0			N11W27	Q	
						S16E55	0	0	0			S16E55	Q	
						S23E39	0	0	0			S23E39	Q	
						S29E62	0	0	0			S29E62	Q	
						N17E01	0	0	0			N17E01	Q	
323	19	18	151	130	05	S22W78	0	0	0		18	S22W78	Q	SOLQUIET MAGQUIET
						N23W60	0	0	0			N23W60	Q	
						S19W42	0	0	0			S19W42	Q	
						S18W56	0	0	0			S18W56	Q	
						N11W41	0	0	0			N11W41	Q	
						S19E41	0	0	0			S19E41	Q	
						S23E26	0	0	0			S23E26	Q	
						S29E48	0	0	0			S29E48	Q	
						N16W11	0	0	0			N16W11	Q	
						N15E71	0	0	0			N15E71	Q	
324	20	19	102	131	12	N38W46	0	0	0		19	N38W46	Q	SOLQUIET MAGQUIET
						N23W71	0	0	0			N23W71	Q	
						S19W55	0	0	0			S19W55	Q	
						S17W68	0	0	0			S17W68	Q	
						S18E28	0	0	0			S18E28	Q	
						S22E13	0	0	0			S22E13	Q	
						S29E35	0	0	0			S29E35	Q	
						N15E59	1	0	0			N15E59	Q	
325	21	20	143	138	20	N23W83	0	0	0		20	N23W83	Q	SOLQUIET MAGALERT MINOR 21/23
						N39W58	1	0	0			N39W58	Q	
						S19W65	0	0	0			S19W65	Q	
						S18W82	0	0	0			S18W82	Q	
						S18E14	0	0	0			S18E14	Q	
						S22W01	1	0	0			S22W01	Q	
						S28E23	0	0	0			S28E23	Q	
						N16E45	2	0	0			N16E45	Q	
						S30E03	0	0	0			S30E03	Q	
						S17E64	0	0	0			S17E64	Q	
326	22	21	127	129	09	N39W72	12	0	0		21	N39W72	Q	SOLQUIET MAGNIL
						S18E01	1	0	0			S18E01	Q	
						S22W12	0	0	0			S22W12	Q	
						S28E11	1	0	0			S28E11	Q	
						N15E33	0	0	0			N15E33	Q	
						S30W06	0	0	0			S30W06	Q	
						S17E50	0	0	0			S17E50	Q	
						N24E04	0	0	0			N24E04	Q	
						S11E44	0	0	0			S11E44	Q	
						N16E85	0	0	0			N16E85	Q	
327	23	22	131	130	12	N39W85	0	0	0		22	N39W85	Q	SOLQUIET MAGQUIET
						S18W11	0	0	0			S18W11	Q	
						S23W26	0	0	0			S23W26	Q	
						S28W02	0	0	0			S28W02	Q	
						S30W21	0	0	0			S30W21	Q	
						S17E37	0	0	0			S17E37	Q	
						N24W08	0	0	0			N24W08	Q	
						S11E32	0	0	0			S11E32	Q	
						N15E71	0	0	0			N15E71	Q	
						S20W49	0	0	0			S20W49	Q	
328	24	23	86	126	07	S18W24	0	0	0		23	S18W24	Q	SOLQUIET MAGQUIET
						S28W13	0	0	0			S28W13	Q	
						S18E26	0	0	0			S18E26	Q	
						N23W22	0	0	0			N23W22	Q	
						N15E56	0	0	0			N15E56	Q	
						S12W26	0	0	0			S12W26	Q	
329	25	24	138	127	11	S18W37	1	0	0		24	S18W37	Q	SOLQUIET MAGQUIET
						S28W26	0	0	0			S28W26	Q	
						N15W05	0	0	0			N15W05	Q	
						S19E10	0	0	0			S19E10	Q	
						N15E40	4	0	0			N15E40	Q	
						S21W75	1	0	0			S21W75	Q	
						S12W39	2	0	0			S12W39	Q	
						N26E59	0	0	0			N26E59	Q	
						N09E66	0	0	0			N09E66	Q	
						N13E83	0	0	0			N13E83	Q	

ALERT PERIODS

INTERNATIONAL URSIGRAM
AND WORLD DAYS SERVICE

NOVEMBER 1978

SUMMARY OF THE GEOALERT WWA MESSAGES

Message serial number	Date of issue	Date of observation	Wolf number	10 cm solar flux	A index	Active Regions				Outstanding events	Forecasts			Alert Situations
						Location	No. of Flares				Date	Location	Desc*	
						Lat-Long	Total	M	X			Lat-Long		
330	26	25	154	131	31	S18W51	0	0	0		25	S18W51	Q	SOLQUIET MAGALERT MINOR 26
						S28W40	1	0	0			S28W40	Q	
						N16W20	0	0	0			N16W20	Q	
						S18E02	0	0	0			S18E02	Q	
						N15E27	1	0	0			N15E27	Q	
						S11W52	0	0	0			S11W52	Q	
						N26E44	0	0	0			N26E44	Q	
						N09E53	1	0	0			N09E53	Q	
						N13E70	2	0	0			N13E70	Q	
						S14E35	0	0	0			S14E35	Q	
						N21E42	0	0	0			N21E42	Q	
331	27	26	220	136	25	S18W64	0	0	0	MINOR MAGSTORM HAS	26	S18W64	Q	SOLQUIET MAGALERT 27
						S28W50	0	0	0	SUBSIDED GRADUALLY		S28W50	Q	
						N16W31	0	0	0			N16W31	Q	
						S18W15	0	0	0			S18W15	Q	
						N15E14	2	0	0			N15E14	Q	
						N10E41	1	0	0			N10E41	Q	
						N16E40	0	0	0			N16E40	Q	
						S14E20	0	0	0			S14E20	Q	
						N13W16	1	0	0			N13W16	Q	
						N09W13	0	0	0			N09W13	Q	
						S22W02	0	0	0			S22W02	Q	
						N13E24	0	0	0			N13E24	Q	
						N16E53	0	0	0			N16E53	Q	
						N18E66	0	0	0			N18E66	Q	
						N22E73	0	0	0			N22E73	Q	
						S27E75	0	0	0			S27E75	Q	
332	28	27	218	149	13	S18W81	0	0	0		27	S18W81	Q	SOLQUIET MAGNIL
						S28W65	0	0	0			S28W65	Q	
						N13W43	5	0	0			N13W43	E	
						N23W75	2	0	0			N23W75	Q	
						N14W01	0	0	0			N14W01	Q	
						N08E24	1	0	0			N08E24	Q	
						N14E50	0	0	0			N14E50	Q	
						S14E07	0	0	0			S14E07	Q	
						N13E12	0	0	0			N13E12	Q	
						N15E40	0	0	0			N15E40	Q	
						N22E61	0	0	0			N22E61	Q	
						N27E63	0	0	0			N27E63	Q	
						S26E03	0	0	0			S26E03	Q	
						N17E77	0	0	0			N17E77	E	
333	29	28	217	167	06	S29W78	0	0	0	TENFLARE TOYOKAWA	28	S29W78	Q	SOLQUIET MAGQUIET
						N13W55	8	0	0	28/0530 UT. 120		N13W55	E	
						N14W14	0	0	0	FLUX UNITS		N14W14	Q	
						N09E11	2	0	0			N09E11	Q	
						N15E38	1	1	0			N15E38	E	
						S14W06	1	1	1			S14W06	Q	
						N14E28	0	0	0			N14E28	Q	
						N23E48	0	0	0			N23E48	Q	
						N27E51	0	0	0			N27E51	Q	
						S18E67	1	0	0			S18E67	Q	
						S30E42	0	0	0			S30E42	Q	
						S12E66	0	0	0			S12E66	Q	
334	30	29	177	167	06	N13W69	5	0	0		29	N13W69	Q	SOLALERT MINOR 30 MAGQUIET
						N14W28	0	0	0			N14W28	Q	
						N09W01	0	0	0			N09W01	Q	
						N15E25	2	1	0			N15E25	C,A	
						S14W19	0	0	0			S14W19	Q	
						N14E18	0	0	0			N14E18	Q	
						N23E35	0	0	0			N23E35	Q	
						S18E54	8	0	0			S18E54	E	
						S28E29	0	0	0			S28E29	Q	
						S12E53	0	0	0			S12E53	Q	
						S21E67	1	0	0			S21E67	E	
335	01	30	176	172	04	N13W82	1	0	0		30	N13W82	E	SOLALERT MAGALERT MINOR 01/02
						N15W40	0	0	0			N15W40	Q	
						S14W34	0	0	0			S14W34	Q	
						N09W15	0	0	0			N09W15	Q	
						N14E02	0	0	0			N14E02	Q	
						N15E11	2	1	0			N15E11	C,A	
						N24E23	0	0	0			N24E23	Q	
						S18E40	7	0	0			S18E40	C,A	
						S20E50	0	0	0			S20E50	E	
						N18E78	0	0	0			N18E78	Q	

* Q=Quiet E=Eruptive A=Active P=Proton C=Caution D=Doubtful O.G.=Other Groups MF=Major Flare

RELATIVE SUNSPOT NUMBERS

ZURICH, R_Z

	1977 FINAL	1978 PROVISIONAL										
DAY	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV
1	28	84	128	93	70	77	119	46	42	127	90	109
2	28	88	128	83	68	85	93	61	48	167	119	122
3	31	102	131	95	71	91	74	47	38	151	107	125
4	47	102	138	103	75	76	60	34	62	161	91	129
5	58	73	137	76	94	74	51	54	74	175	55	116
6	58	69	129	67	92	73	29	57	66	178	71	103
7	55	42	121	90	88	70	39	84	58	148	95	118
8	45	36	89	99	105	56	45	105	62	120	103	118
9	58	36	94	85	126	59	36	108	64	109	121	108
10	75	15	96	92	111	57	29	115	67	105	149	116
11	71	18	95	85	109	63	57	127	58	84	158	122
12	62	26	92	78	107	65	62	111	71	72	158	99
13	44	26	93	65	93	72	56	114	85	88	156	90
14	37	36	82	62	75	72	62	109	93	113	170	78
15	41	30	59	72	61	78	89	102	72	133	166	59
16	39	23	64	70	85	91	97	118	42	148	163	77
17	29	24	56	66	99	79	103	98	49	136	137	92
18	33	14	55	72	100	85	115	78	53	158	123	88
19	48	8	53	64	107	84	109	74	42	150	154	85
20	23	7	52	51	115	74	109	76	28	163	151	76
21	23	28	63	77	112	73	154	77	26	172	144	62
22	17	38	74	82	109	73	158	48	36	148	125	77
23	23	43	69	85	105	72	158	33	45	156	116	53
24	31	37	78	82	102	82	154	38	45	167	103	57
25	35	32	94	70	139	86	135	30	54	163	96	85
26	41	47	86	53	115	84	152	13	37	152	91	101
27	50	69	79	50	90	97	134	21	55	140	115	118
28	45	79	88	49	75	90	130	31	58	122	117	118
29	58	90		48	72	103	115	48	59	122	137	109
30	64	104		44	70	107	99	35	70	91	129	96
31	67	118		70		109		36	100		98	
MEAN	43.2	49.3	89.8	73.5	94.7	79.3	94.1	68.4	56.7	137.3	122.8	96.6

1977 yearly mean = 27.5

DAILY SOLAR FLUX AT 2800 MHz
OTTAWA ARO

FLUX ADJUSTED TO 1 A.U., S_a

	1977	1978										
DAY	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV
1	88.4	126.9*	139.1	136.3	130.8	181.4	149.1	142.9	106.8	159.8	139.0	152.0
2	91.2	133.9	152.6	141.1	129.8	183.0	147.0*	127.6	106.0	171.7*	137.8	159.0
3	93.7	130.2	156.6*	146.6	134.5	182.2A	138.8	116.5	109.6	167.0	131.7	169.9
4	95.9	124.8	154.0	148.4	143.3*	178.4	118.6	117.4	112.3	174.4*	132.8*	177.4
5	96.9	119.2	159.0	154.5	146.7*	173.9*	116.9	118.9	117.6	179.4	138.7*	181.2
6	102.8*	118.7*	156.1	162.8	145.3*	173.1	109.8	119.3*	122.6	181.1	137.4	172.2*
7	105.5	111.6	157.3	165.2	146.9	162.6*	110.6	128.9	128.2	177.5	141.6	174.6
8	106.7	102.8	157.0*	168.7	148.6	143.4	109.3	135.9	130.6	167.1	150.1	168.0*
9	112.6*	97.0	155.2	183.7	156.1	135.1	106.5	147.1*	128.1*	157.6*	155.8	164.9*
10	114.7	93.5	148.7	179.1	155.4	129.5	108.4	156.0*	127.5	149.6	162.3	166.3
11	107.4	93.1	154.2	175.2	162.8*	133.8	113.2	163.2*	121.7	141.5	171.6*	163.7
12	111.0	92.1	159.0	169.8	156.2	138.2	116.4*	174.2*	124.5	138.5	177.2	158.4
13	108.6	90.3	151.2	160.9	145.6	140.2	120.3*	165.5	134.9	138.0	178.5	145.3
14	93.7*	88.6	148.4	160.5	139.1	143.7	126.4*	163.1	132.7	143.5*	180.1	136.3
15	92.5	89.6	136.8	154.2	141.4	146.1	132.5	169.5	138.0*	152.6	182.0	133.8
16	92.5	86.4	130.2	143.3	137.6	147.8*	139.5*	163.4	123.6	161.5	176.7*	128.8
17	91.1	83.8	125.9	135.4	133.4	143.8	149.8	159.5	119.3*	161.8	171.5	128.1
18	93.6	84.7	124.9	132.3	134.1	135.6	153.5*	154.1*	115.6	165.3*	169.4	127.4
19	91.8	85.4	119.1	128.1	139.5*	133.6	162.8*	148.6	111.6	168.8*	170.4	128.9
20	88.7	87.8	122.2	125.3	138.1	132.3*	174.2	142.9*	107.5	168.6	171.8	134.9
21	87.8	91.4	122.2	118.2	138.4*	132.7	185.4*	140.2	104.8	172.5	166.9*	126.8
22	89.9	96.9	127.7	117.8	146.4	135.7*	190.3	127.0	106.0	171.5*	161.4	127.1
23	91.2	99.6	131.8	116.4	162.9	142.9*	196.7	123.4*	104.1	165.5*	161.4	121.9
24	93.9	100.4	135.6	117.5	159.8	146.5*	194.8	118.5	105.4	158.9	156.9	123.5
25	96.3	103.3	139.3	118.2	159.1*	147.6	183.5	113.7	104.2	157.2	156.1	124.7*
26	99.3	112.7	134.8	112.5	166.7	152.8	182.4*	112.2	100.7	148.5	154.4	132.7
27	98.3	116.4	137.5	114.1	172.8	150.6*	179.5	110.8	107.3*	146.2*	150.7	144.4*
28	98.9	127.7*	135.4	112.7	176.6*	147.1*	174.1	109.9	107.7*	147.8	148.4*	154.1
29	105.6*	132.2*		111.1	185.2	148.6	167.4	109.2	116.2	148.1	149.8	162.2
30	114.7	134.9		115.4*	182.1*	147.2*	154.6*	109.2	124.1	142.6	146.5	167.8
31	120.2	133.3*		124.5		152.6		108.8	133.9*		144.8	
MEAN	98.9	106.1	141.8	140.3	150.5	149.7	146.8	135.4	116.9	159.6	157.1	148.2

* adjusted for burst
A = interpolated data point

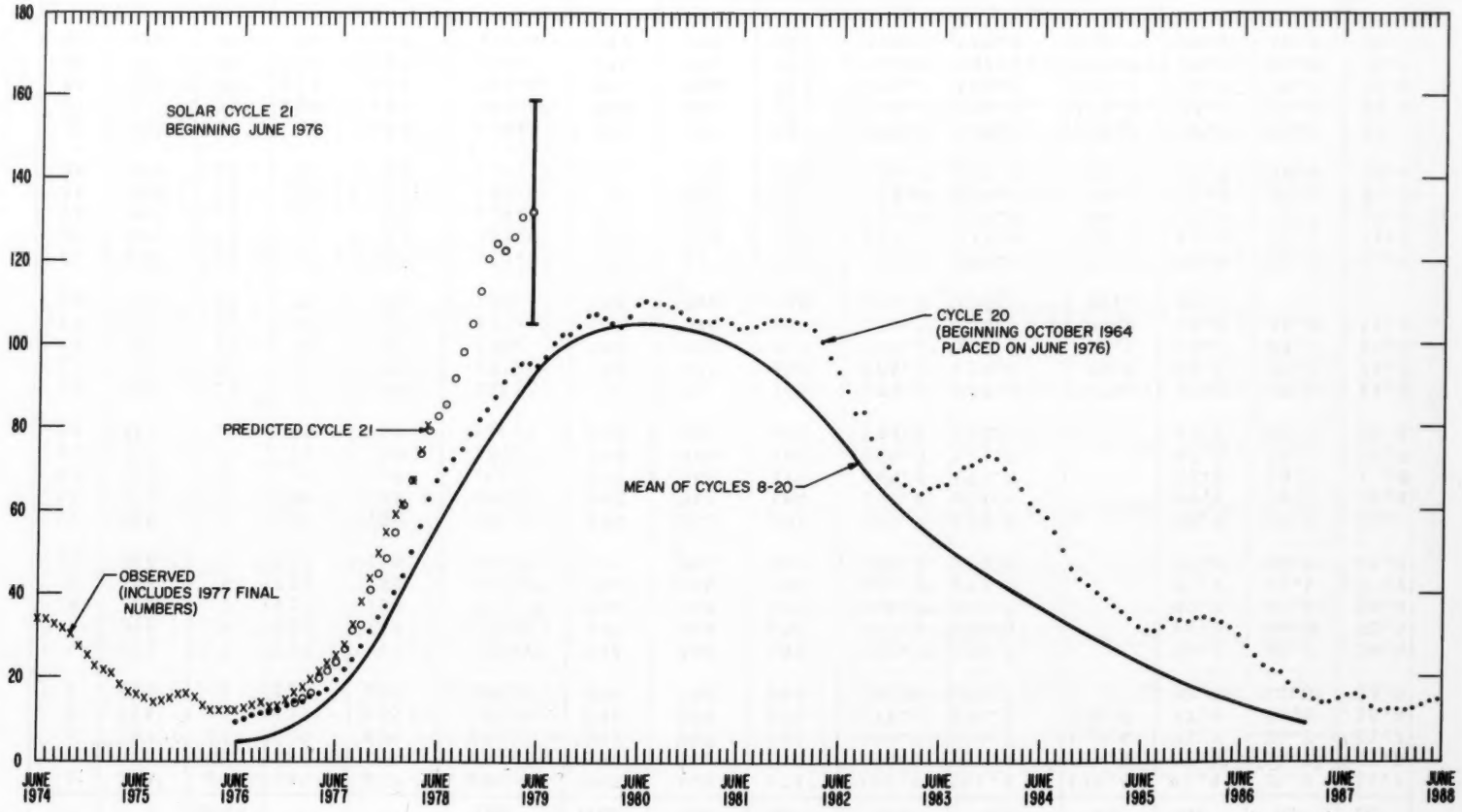
DAILY SOLAR INDICES

NOVEMBER 1978

NOV 1978	YEAR DAY	BARTELS 27-DAY CYCLE NUMBER	SUNSPOT NUMBERS		OBSERVED FLUX	SOLAR FLUX ADJUSTED TO 1 A.U.								
			R_Z	$R_{A'}$	OTTAWA 2800	AFGL 15400	AFGL 8800	AFGL 4995	OTTAWA 2800	AFGL 2695	AFGL 1415	AFGL 606	AFGL 410	AFGL 245
1	305	25	109	107	154.3	596	343	179	152.0	161.0	115.0	76.8	35.0	11.7
2	306	26	122	108	161.6	594	342	184	159.0	167.7	114.8	72.8	34.9	11.8
3	307	27	125	134	172.7	592	357	196	169.9	175.7	119.4	73.7	34.3	11.7
4	308	1	129	129	180.5	590	359	206	177.4	190.2	129.2	77.9	38.9	16.8
5	309	2	116	128	184.3	588	352	206	181.2	194.7		81.4	40.6	23.0
6	310	3	103	117	175.4*	586	346	197	172.2*	181.2		84.2	45.0	34.4
7	311	4	110	105	177.8	585	343	196	174.6	180.6		86.3	44.3	32.6
8	312	5	118	108	171.3*	584	343	195	168.0*	180.0		80.3	42.6	30.8
9	313	6	108	103	168.1*	583	345	196	164.9*	178.5		77.7	43.4	2 .7
10	314	7	116	116	169.7	582	356	203	166.3	176.7		75.0	34.8	17.8
11	315	8	122	109	167.0	579	353	197	163.7	170.9		69.8	35.5	23.
12	316	9	99	82	153.6	582	349	184	150.4	162.4		69.0	36.4	16.0
13	317	10	90	91	148.4	577	341	179	145.3	155.6		68.8	30.3	1 .9
14	318	11	78	69	139.2	568	326	168	136.3	141.0		67.9	33.5	16.8
15	319	12	59	57	136.8	582	336	165	133.8	141.6		69.1	34.3	12.8
16	320	13	77	74	131.7	66	32	159	128.8	135.4	97.1	67.0	27.6	11.3
17	321	14	92	79	131.1	563	323	162	128.1	134.6	98.2	66.5	33.8	11.3
18	322	15	88	87	130.4	559	320	162	127.4	130.4	96.8	66.0	29.6	11.4
19	323	16	85	80	132.1	574	328	165	128.9	136.6	94.2	65.9	31.2	11.1
20	324	17	76	67	138.2	580	340	166	134.9	139.1	95.1	65.5		
21	325	18	62	57	129.1	570	327	161	126.0	132.8	95.0	62.5	32.9	11.2
22	326	19	77	63	130.4	567	325	162	127.1	133.4	100.3	61.9	32.1	11.3
23	327	20	53	46	125.0	570	323	156	121.9	129.6	96.3	63.8	30.7	10.3
24	328	21	57	48	126.8	75	327	154	123.5	130.0	94.7	61.9	29.2	10.8
25	329	22	85	62	128.0*	581	325	160	124.7*	132.0	98.5	63.9	30.6	10.4
26	330	23	101	89	136.2	586	337	167	132.7	142.3	105.1	67.6	33.7	10.
27	331	24	118	126	148.4*	583	346	178	144.4*	152.6	114.6	72.7	39.0	11.6
28	332	25	118	121	158.4	581	353	200	154.1	163.2	126.0	83.7	49.7	15.0
29	333	26	109	115	166.7	580	351	192	162.2	167.2	122.6	74.3	42.9	35.9
30	334	27	96	108	172.6	592	355	200	167.8	176.0	122.7	80.5	42.0	26.1
MEAN			96.6	92.8	151.5	580	340	180	148.2	156.4	107.1	71.8	36.2	17.2

* Adjusted for burst.

Note: Data gaps in AFGL Sagamore Hill are due to equipment problems.



OBSERVED AND PREDICTED SUNSPOT NUMBERS

SMOOTHED OBSERVED AND PREDICTED SUNSPOT NUMBERS
CYCLE 21

MONTH	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1976	15.2	13.2	12.2	12.6	12.5	12.2	12.9	14.0	14.3	13.4	13.5	14.8
1977	16.7	18.1	20.0	22.2	24.2	26.3	28.8	33.0	38.5	44.6	50.5	55.4
1978	59.6	62.7	67.7	74.9	81.0	87.1	92.0	96.5	100.6	104.3	108.5	114.3
						(3)	(6)	(9)	(12)	(13)	(13)	(12)
1979	119.2	123.4	127.3	129.9	132.4	136.5	140.6	143.3	145.2	146.2	146.6	146.1
	(13)	(15)	(19)	(24)	(27)	(30)	(32)	(35)	(36)	(38)	(39)	(40)
1980	145.0	143.8	143.3	143.8	143.4	140.5	137.3	134.8	133.3	132.4	131.0	129.6
	(40)	(40)	(38)	(37)	(38)	(40)	(42)	(43)	(42)	(43)	(45)	(48)
1981	129.1	128.5	126.2	123.4	121.1	118.8	117.7	117.4	116.5	115.1	112.9	110.1
	(51)	(51)	(49)	(4[illegible])	(48)	(47)	(46)	(45)	(45)	(45)	(43)	(41)
1982	107.3	104.3	101.8	99.8	97.6	95.2	91.5	87.3	83.5	79.2	76.1	72.7
	(38)	(37)	(36)	(35)	(33)	(31)	(29)	(27)	(25)	(22)	(21)	(21)
1983	68.6	65.8	63.8	61.6	59.5	57.2	55.2	53.4	51.7	50.4	49.5	48.8
	(20)	(21)	(22)	(22)	(22)	(23)	(24)	(26)	(27)	(29)	(30)	(30)
1984	47.7	46.0	43.4	40.4	37.9	36.7	35.7	34.1	32.6	31.6	30.3	28.8
	(31)	(30)	(28)	(28)	(29)	(31)	(31)	(31)	(30)	(29)	(27)	(27)
1985	27.7	26.8	25.9	25.4	24.7	23.7	23.0	22.2	21.5	20.6	19.7	19.1
	(27)	(26)	(26)	(26)	(25)	(24)	(23)	(22)	(22)	(23)	(23)	(24)
1986	18.7	18.1	17.4	16.5	15.3	14.2	13.3	12.7	12.4	12.2	12.0	11.9
	(24)	(24)	(23)	(22)	(21)	(20)	(19)	(18)	(17)	(16)	(15)	(13)
1987	12.1	12.7	13.5	14.4	15.4	16.4	17.3					
	(11)	(11)	(11)	(11)	(12)	(13)	(13)					

The table gives observed Zürich smoothed sunspot numbers for Cycle 21 up to the one calculated from the latest observed data, marked by a vertical bar. They are based on final Zürich numbers through 1977 and provisional Zürich numbers thereafter. Some of these data after the June 1976 value will change slightly when final data for 1978 are received. The numbers after the vertical bar are predictions by the McNish-Lincoln method (see *Explanation of Data Reports*, February 1978). Shown in parentheses are the corresponding absolute values of the 90% confidence interval, an indication of the uncertainty above and below the predicted number.

The McNish-Lincoln method is very sensitive to the identification of a minimum epoch. In SGD 390-401 issues, the Cycle 21 predictions were based on March 1976 as the minimum epoch. Latest studies, including one published by Waldmeier, show that June 1976 is the more appropriate epoch of minimum. Thus, we have adopted a June 1976 mimimum.

*Prediction of Sunspot Maximum -- The McNish-Lincoln prediction method is recommended for predictions up to only one year ahead. From that point, the predictions regress rapidly towards the mean value. Combining this McNish-Lincoln prediction of sunspot maximum with the Ohl method (as done by Sargent, see *Explanation of Data Reports*, February 1978) indicates that the most probable value for sunspot maximum is 150 ± 34.

Hα SOLAR FLARES

NOVEMBER 1978

OBSERVATORY	OBSERVED UT				LOCATION					DURATION — MIN.	IMPORTANCE	OBS.		MEASUREMENTS			REMARKS
	DATE NOV	START	MAX. PHASE	END	APPROX. LAT.	APPROX. MER. DIST.	CENTRAL DISTANCE	NOAA PLAGE REGION	CMP DAY			COND.	TYPE	TIME — UT	MEAS. AREA Mill. of Disk	CORR. AREA Sq. Deg.	
TEHR	01	0345	0348	0421	S24	E49	.770		4.8	36	SB	2	C		127		
RAMY	01	1202	1203	1206	S21	E41	.675		4.6	4	SN	3	C		16		H
RAMY	01	1228	1229	1232	S18	W36	.603		29.8	4	SB	3	C		27		
RAMY	01	1242	1245	1257	S21	E40	.663		4.5	15	SN	3	C		20		F
RAMY	01	1310	1311	1315	S21	E40	.663		4.5	5	SN	3	C		16		
WEND	01	1327		1408	N22	W53	.857	15619	28.6	41	2N		V		300	5.5	C
RAMY	01	1329	1339	1441	N21	W55	.869	15619	28.4	72	1B	3	C		163		DE
MCMA	01	1333E	1337	1450	N23	W56	.882	15619	28.4	77D	SB		C	1337	75	1.5	E
RAMY	01	1348	1352	1421	S18	W37	.616		29.8	33	SB	3	C		62		
MCMA	01	1403	1404	1410	S22	E36	.619	15635	4.3	7	SB		C	1404	50	.7	E
MCMA	01	1440	1443	1448	S20	E34	.586	15635	4.2	8	SF		C	1443	30	.4	E
RAMY	01	1441	1443	1450	S21	E39	.651		4.5	9	SN	3	C		39		
MCMA	01	1546	1549	1559	S20	E34	.586	15635	4.2	13	SF		C	1549	25	.3	D
MCMA	01	1627	1631	1635	S20	E33	.573	15635	4.2	8	SF		C	1631	25	.3	D
MCMA	01	1639	1644	1700	S20	E33	.573	15635	4.2	21	SF		C	1644	25	.3	D
MCMA	01	1743	1748	1755	N23	W58	.896	15619	28.4	12	SF		C	1748	50	1.0	E
MCMA	01	1845	1847	1853	S20	E31	.547	15635	4.1	8	SF		C	1847	40	.5	E
MCMA	01	1939	1941	1945D	S20	E31	.547	15635	4.1	6D	SF		C	1941	25	.3	D
MCMA	02	1255		1320D	S13	E73	.952	15641	8.0	25D	SN		C	1258	40	1.5	D
MCMA	02	1337	1343	1406	S13	E73	.952	15641	8.0	29	SN		C	1343	25	.9	D
MCMA	02	1401	1405	1420	S23	E33	.588	15635	5.1	19	SB		C	1405	100	1.4	E
RAMY	02	1457	1458	1501	S12	E67	.916		7.6	4	SF	3	C		25		
RAMY	02	1512	1512	1518	S12	E67	.916		7.7	6	SF	3	C		12		
RAMY	02	1522	1523	1533	N13	W17	.430		1.4	11	SN	3	C		20		
RAMY	02	1530	1532	1551	S12	E67	.916		7.7	21	SF	3	C		18		
MCMA	02	1707	1708	1719	S31	E32	.629	15635	5.1	12	SF		C	1708	20	.3	D
RAMY	02	1917	1920	1935	S12	E64	.894		7.6	18	SF	2	C		49		
MONT	03	0936	0940	0945D	S18	W61	.871		29.8	9D	SF		C	0940	60		E
RAMY	03	1116	1124	1132	S12	E53	.794		7.4	16	SN	3	C		17		
RAMY	03	1134	1137	1142	S12	E53	.794		7.5	8	SN	3	C		44		
RAMY	03	1343	1413	1459	S12	E51	.773		7.4	76	SB	3	C		104		
MCMA	03	1412	1414	1421	S14	E56	.825	15641	7.8	9	SN		C	1414	40	.8	E
RAMY	03	1432	1435	1443	S24	E15	.390		4.7	11	SB	3	C		41		
MCMA	03	1454	1457	1507	S17	W66	.908	15620	29.7	13	SN		C	1457	40	1.2	EL
RAMY	03	1457	1457	1507	S20	W69	.928		29.4	10	SB	3	C		24		
RAMY	03	1528E	1554	1730	S12	E50	.762		7.4	122D	SN	3	C		31		F
RAMY	03	1528E	1632	1730	S12	E50	.762		7.4	122D	SB	3	C		95		F
MCMA	03	1540	1558	1800D	S14	E55	.815	15641	7.8	140D	SN		C	1558	15	.3	D
RAMY	03	1554	1555	1611	S26	E15	.414		4.8	17	SN	3	C		19		
MCMA	03	1605	1607	1712	S17	E66	.908	15620	8.6	67	SF		C	1607	30	.9	EK
MCMA	03	1605	1633	1712	S17	E66	.908		8.6	67			C	1633	40	1.2	
RAMY	03	1844	1857	1910	S26	E14	.406		4.8	26	SN	3	C		28		F
RAMY	03	1854	1856	1918	S12	E50	.762		7.5	24	SB	3	C		49		F
MCMA	03	1854	1855	1919	S23	E16	.388	15635	5.0	25	SN		C	1855	40	.5	E
HOLL	03	2012E	2013	2019	S22	E18	.399		5.2	7D	SN	3	C		37		F
RAMY	04	1240	1241	1307	S11	E42	.666		7.7	27	SB	3	C		44		F
RAMY	04	1452	1453	1501	S11	E43	.679		7.8	9	SB	3	C		28		F
MCMA	04	1926	1927	1931	S14	E46	.718	15641	8.3	5	SF		C	1927	25	.4	D
MCMA	05	1419	1420	1425	S23	E10	.330	15645	6.3	6	SN		C	1420	25	.3	D
MCMA	05	1512	1515	1530	S22	W07	.294	15635	5.1	18	SN		C	1515	50	.6	E
MCMA	05	1515	1519	1600	N17	E62	.910	15643	10.3	45	SN		C	1519	35	.8	EL
RAMY	05	1529E	1529U	1615	N18	E61	.905		10.2	46D	SN	3	C		29		F
RAMY	05	1611	1612	1619	S26	W11	.380		4.8	8	SN	4	C		26		F
RAMY	05	1618	1622	1732	S12	E26	.443		7.6	74	SN	4	C		35		
MCMA	05	1854	1900	1932	S18	W24	.441	15635	4.0	38	SN		C	1900	20	.3	D
MCMA	05	1913	1918	1921	N23	E70	.963	15643	11.1	8	SN		C	1918			DL
MCMA	05	1915	1916	1920	S11	E25	.425	15641	7.7	5	SN		C	1916	30	.3	D
MCMA	05	1917	1919	1921D	S23	E07	.309	15645	6.3	4D	SN		C	1919	25	.3	D
PALE	05	2349	2355	0006	N20	E58	.889		10.3	17	SN	3	C		28		DE
PALE	06	0046	0047	0050	S21	W23	.449		4.3	4	SN	3	C		32		DE
TEHR	06	0440	0443	0453	S12	E24	.412		8.0	13	SB	2	C		95		
RAMY	06	1220	1226	1249	S24	W22	.462	15642	4.9	29	1B	3	C		267		
WEND	06	1225E		1240	S22	W17	.386		5.2	15D	SN		V				H
RAMY	06	1540	1544	1550	N18	E48	.801		10.3	10	SB	4	C		38		
RAMY	06	1600	1606	1633	S11	E13	.236		7.6	33	SN	4	C		37		
RAMY	06	1701	1718	1720	S11	E13	.236		7.7	19	SN	3	C		25		
RAMY	06	2019	2024	2030	S11	E11	.205		7.7	11	SN	3	C		133		

Hα SOLAR FLARES

NOVEMBER 1978

OBSERVATORY	OBSERVED UT				LOCATION					DURATION	IMPORTANCE	OBS.		MEASUREMENTS			REMARKS
	DATE NOV	START	MAX. PHASE	END	APPROX. LAT.	APPROX. MER. DIST.	CENTRAL DISTANCE	McMATH PLAGE REGION	CMP DAY	MIN.		CORD.	TYPE	TIME UT	MEAS. AREA Mill. of Disk	CORR. AREA Sq. Deg.	
PALE	06	2022	2024	2027	S10	E 3	.082		7.1	5	SN	2	C		112		DE
HOLL	06	2330	2332	2341	S 8	E 3	.059		7.2	11	SN	2	C		110		F
PALE	06	2332E	2332U	2336	S11	E 9	.174		7.7	4D	SN	3	C		55		DE
MANI	06	2333E	2334	2340	S12	E10	.197		7.7	7D	SF	3	V		100	1.0	F
MANI	07	0709E	0709U	0720D	S22	W26	.493		5.3	11D	SF	3	V		40	.5	
MONT	07	1029	1041	1051	S17	W45	.710		4.1	22	SF		C	1041	50		
RAMY	07	1133	1134	1150	S20	W44	.704		4.2	17	SB	2	C		61		
RAMY	07	1230	1234	1252	S20	W44	.704		4.2	22	SB	3	C		69		
MCMA	07	1618E	1637	1728D	N22	E43	.775	15643	10.9	70D	1N		C	1637	250	3.7	EL
RAMY	07	1618	1621	1653D	N18	E35	.673	15643	10.3	35D	1B	3	C		345		F S
RAMY	07	1639	1639	1642	S20	W46	.727		4.2	3	SN	3	C		18		
HOLL	07	1836	1840	1854	N20	E26	.598		9.7	18	SN	2	C		60		H
MCMA	07	1845E		1856D	N18	E24	.559	15643	9.6	11D	SN		C	1845	60	.7	E
HOLL	07	1908	1910	1923	S 9	W 3	.069		7.6	15	SN	2	C		59		F
PALE	07	1921	1922	1930	S11	W 2	.087		7.7	9	SN	3	C		26		DE
MCMA	07	1931E		1940D	S12	W02	.103	15641	7.7	9D	SF		P	1938	80	.9	E
RAMY	07	2056	2057	2103	S20	W49	.759		4.2	7	SN	3	C		34		
PALE	07	2110	2113	2117	S11	W 3	.095		7.7	7	SN	3	C		67		DE
RAMY	08	1153	1204	1215	S20	W58	.846	15641	4.1	22	SN	3	C		43		
RAMY	08	1234	1240	1242D	S12	W11	.211	15641	7.7	8D	1B	4	V		292		F
RAMY	08	1239	1242	1257	N18	E24	.560		10.3	18	SB	4	C		40		
MCMA	08	1325	1329	1335	N16	E14	.445	15643	9.6	10	SN		C	1329	70	.7	EL
RAMY	08	1332	1333	1342	N16	E14	.445		9.6	10	SN	4	C		47		
MCMA	08	1357	1406	1455	S20	W60	.863	15635	4.1	58	1N		C	1406	125	3.0	EL
RAMY	08	1403	1404	1428	N18	E23	.550		10.3	25	SN	4	C		29		
RAMY	08	1404	1406	1429	S24	W49	.767		4.9	25	SN	4	C		27		
HOLL	08	1405E	1409U	1443	S19	W59	.854	15635	4.2	38D	1B	2	C		210		U
RAMY	08	1503	1553	1635D	N21	E21	.564		10.2	92D	SN	4	C		56		F
MCMA	08	1504	1514	1535	N21	E21	.564	15643	10.2	31	SF		C	1514	70	.8	E
RAMY	08	1530	1542	1558	S12	W13	.241		7.7	28	SB	4	C		39		
MCMA	08	1531	1536	1548	N16	E14	.445	15643	9.7	17	SF		C	1536	30	.3	E
MCMA	08	1542	1551	1600	S14	W11	.228	15641	7.8	18	SF		C	1551	100	1.1	E
MCMA	08	1549	1551	1623	N21	E21	.564	15643	10.2	34	SF		C	1551	60	.7	E
MCMA	08	1640	1659	1735	N21	E21	.564	15643	10.3	55	SN		C	1659	35	.4	E
MCMA	08	1649	1653	1733	S14	W12	.242	15641	7.8	44	1B		C	1653	180	2.0	E
RAMY	08	1649	1652	1723	S14	W11	.228	15641	7.9	34	1B	4	C		245		F
RAMY	08	1749	1752	1755	S20	W61	.871		4.2	6	SN	4	C		19		F
RAMY	08	1751	1753	1807	N18	E12	.457	15643	9.6	16	1B	4	C		429		FDE
MCMA	08	1751	1753	1807	N18	E12	.457	15643	9.6	16	1B		C	1753	200	2.1	EH
HOLL	08	1751E	1752	1805	N20	E16	.512	15643	9.9	14D	1B	3	C		278		H
MCMA	08	1924	1929	1941D	S12	W17	.303	15641	7.5	17D	SF		C	1929	50	.6	E
PALE	09	0022	0024	0033	S12	W19	.334		7.6	11	SN	3	C		105		F
TEHR	09	0938E	0940	0943D	S 9	W25	.421		7.5	5D	SN	1	C		95		FDE
TEHR	09	1105	1110	1114	S 9	W25	.421		7.6	9	SB	1	C		127		FDE
MONT	09	1105	1107	1117	S10	W22	.375		7.8	12	SN		C	1107	60		E
RAMY	09	1109E	1112	1208	N18	E11	.451		10.3	59D	SB	3	C		48		
TEHR	09	1110	1113	1116	N22	E10	.503		10.2	6	SN	1	C		74		FDE
MONT	09	1111	1114	1143	N08	E09	.294		10.1	32	SF		C	1114	50		E
MCMA	09	1627	1629	1635	S15	W35	.579	15641	7.1	8	SN		C	1629	25	.4	DH
RAMY	09	1845	1910	1916D	S12	W28	.472		7.7	31D	SN	3	C		40		F H
MCMA	09	1907	1908	1917	S12	W28	.472	15641	7.7	10	SN		C	1908	60	.7	E
HOLL	09	1908E	1908U	1914	S13	W28	.474		7.7	6D	SN	3	C		39		F
MCMA	09	1937	1940	1945D	S12	W28	.472	15641	7.7	8D	SN		C	1940	30	.4	E
HOLL	09	1938	1938	1947	S13	W28	.474		7.7	9	SN	3	C		25		F
RAMY	09	1940E	1941	1955	S12	W28	.472		7.7	15D	SB	2	C		33		F
HOLL	09	2217	2220	2226	S13	W30	.504		7.7	9	SB	3	C		27		F
MANI	10	0048E	0050	0055D	N17	E04	.405		10.3	7D	SB	3	V		120	1.2	FZ
PALE	10	0113E	0154U	0232D	N17	E 2	.401	15643	10.2	79D	2N	3	C		574		Z U
RAMY	10	1159	1204	1206	N18	E 4	.421		10.8	7	SN	3	C		23		F
RAMY	10	1248	1249	1255	S12	W38	.614		7.7	7	SB	3	C		26		F
RAMY	10	1359	1402	1415	S14	W38	.617	15641	7.7	16	1B	3	C		208		F
MCMA	10	1423E		1428D	S17	W34	.571	15641	8.0	5D	SF		P	1426	20	.3	D
RAMY	10	1434	1435	1438	N19	W 8	.450		10.0	4	SB	3	C		21		
RAMY	10	1712	1712	1725	S14	W40	.643		7.7	13	SB	3	C		27		
RAMY	10	1727	1747	1818	N18	W 6	.427	15643	10.3	51	1B	3	C		239		DE
RAMY	10	1734	1734	1745	S14	W40	.643		7.7	11	SB	3	C		60		F
MCMA	10	1735E		1743	S14	W43	.681	15641	7.5	8D	SF		C	1736	30	.5	E
MCMA	10	1735E		1805D	N18	W05	.424	15643	10.4	30D	SN		C	1736	125	1.4	E

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OBSERV-ATORY	OBSERVED UT				LOCATION					DURA-TION — MIN.	IM-POR-TANCE	OBS.		MEASUREMENTS			REMARKS
	DATE NOV	START	MAX. PHASE	END	APPROX. LAT.	APPROX. MER. DIST.	CENTRAL DISTANCE	MCMATH PLAGE REGION	CMP DAY			COND.	TYPE	TIME — UT	MEAS. AREA Millionths of Disk	CORR. AREA Sq. Deg.	
PALE	10	1735E	1748	1804	N18	W 8	.436		10.1	29D	SN	3	C		132		FDE
RAMY	10	1939	1942	2019	S14	W41	.656		7.7	40	SB	3	C		90		
MCMA	10	1940		1942D	S14	W44	.693	15641	7.5	2D	SN		C	1941	40	.6	E
RAMY	10	2048	2048	2102	N18	W 7	.431		10.3	14	SB	3	C		28		
MONT	11	0840	0842	0846	N19	W23	.562		9.6	6	SF		C	0842	50		E
MONT	11	0859	0901	0905	N19	W23	.562		9.6	6	SN		C	0901	100		
MONT	11	0926	0927	0929	S15	W57	.834		7.1	3	SF		C	0927	50		E
MONT	11	1016E	1017	1023	N24	E41	.770		14.5	7D	SF		C	1017	50		E
MONT	11	1029	1030	1035	N18	W24	.562		9.6	6	SN		C	1030	150		
MONT	11	1036	1037	1042	N18	W24	.562		9.6	6	SN		C	1037	100		H
RAMY	11	1210	1217	1225	N24	E40	.761		14.5	15	SN	3	C		22		
RAMY	11	1216	1217	1225	N19	W23	.562		9.8	9	SN	3	C		58		
RAMY	11	1221	1222	1230	S12	W53	.793		7.5	9	SB	3	C		17		F
RAMY	11	1242	1243	1246	S12	W55	.814		7.4	4	SN	3	C		25		F
RAMY	11	1414	1416	1423	N19	W24	.572		9.8	9	SB	3	C		141		F
RAMY	11	1503	1504	1524	N17	W25	.562		9.8	21	SN	3	C		20		
MCMA	11	1556	1558	1608	N15	W26	.554	15643	9.7	12	SN		C	1558	35	.4	E
RAMY	11	1557	1558	1604	N17	W26	.572		9.7	7	SB	3	C		42		
RAMY	11	1621	1622	1627	N18	W26	.582		9.7	6	SN	3	C		25		F
RAMY	11	1648	1649	1657	N19	W20	.535		10.2	9	SN	3	C		36		
RAMY	11	1703	1704	1707	N19	W20	.535		10.2	4	SB	3	C		29		
MCMA	11	1737	1740	1753	S16	W63	.885	15641	7.0	16	SN		C	1740	30	.9	D
RAMY	12	1629	1629	1632	N19	W33	.662		10.2	3	SN	3	C		35		
RAMY	12	1850	1854	1858	N19	W34	.672		10.2	8	SN	4	C		28		
MONT	13	0826E	0826	0833	N22	W46	.803		9.9	7D	SF		C	0826	50		E
MONT	13	0918	0924	0931	N22	W46	.803		9.9	13	SN		C	0924	110		E
WEND	13	0948E		1010	N21	W45	.790	15643	10.0	22D	1F		V		300	4.7	E
MONT	13	0956	1000	1006	N22	W47	.812		9.9	10	SN		C	1000	70		E
RAMY	13	1116	1116	1125	N19	W43	.761		10.2	9	SN	2	C		33		
RAMY	13	1131	1136	1159	N19	W44	.771		10.2	28	SB	3	C		88		
RAMY	13	1203	1226	1249	N19	W44	.771		10.2	46	SB	3	C		27		
RAMY	13	1302	1305	1307	N19	W44	.771		10.2	5	SN	3	C		27		
RAMY	13	1303	1303	1306	S14	W76	.965		7.8	3	SB	3	C		16		
RAMY	13	1535	1536	1538	N24	E12	.543		14.5	3	SB	3	C		22		
RAMY	13	1559	1601	1607	N24	E12	.543		14.6	8	SN	3	C		27		
HOLL	13	1559	1602	1604	N25	E11	.552		14.5	5	SN	2	C		32		
HOLL	13	1612	1619	1627	N25	E11	.552		14.5	15	SN	2	C		23		
RAMY	13	2116	2116	2119D	N19	W49	.816		10.2	3D	SN	3	C		16		
MONT	14	0815	0819	0843	S22	W01	.263		14.3	28	SN		C	0819	110		GH
TEHR	14	0815	0820	0837	S27	E 8	.368		14.9	22	SN	2	C		127		U F
MONT	14	1104	1106	1111	N19	W61	.909		9.9	7	SF		C	1106	50		E
MONT	14	1137	1150	1150D	N19	W61	.909		9.9	13D	SN		C	1150	11	.0	E
MONT	15	1839	1113	1145D	N24	W75	.982	15643	9.8	66D	1N		C	1113	250		
TEHR	15	1105	1110	1128	N17	W69	.952		10.3	23	SB	1	C		111		U F
RAMY	15	1115E	1117	1141	N19	W70	.959		10.2	26D	SN	3	C		98		F
RAMY	15	1925	1935	1949	N19	W76	.982		10.1	24	SB	3	C		25		F
PALE	15	1926	1937	1945	N16	W76	.980		10.1	19	SN	3	C		20		DE F
MONT	16	0815	0818	0822	N16	W88	1.000		9.7	7	SN		C	0818	60		E
MCMA	16	1526	1529	1533	S23	E80	.979	15669	22.6	7	SF		C	1529			E
RAMY	16	1529	1530	1536	S26	E77	.967		22.4	7	SF	3	C		28		F
RAMY	16	1624	1625	1627	S21	W47	.738		13.2	3	SN	3	C		22		
MCMA	16	1808	1810	1830D	N24	W32	.693	15651	14.4	22D	SF		C	1810	60	.8	E
MCMA	16	1812	1815	1825	N18	W88	1.000	15643	10.2	13	SN		C	1815			
RAMY	16	1813	1814	1818	N19	W88	1.000		10.2	5	SN	3	C		13		
MCMA	16	1814	1824	1922	S22	E58	.846	15668	21.1	68	SN		C	1824	25	.5	DK
MCMA	16	1814	1845	1922	S22	E58	.846		21.1	68			C	1845			
MCMA	16	1848	1851	1925D	S31	E68	.996	15670	23.4	37D	SN		C	1851			D
RAMY	16	1851	1902	1920	S29	E75	.959		22.4	29	SF	3	C		16		
RAMY	16	1922	1924	1931	S29	E75	.959		22.4	9	SF	3	C		15		
PALE	19	2248	2251	2304	N16	E63	.917		24.7	16	SN	3	C		48		F
HOLL	19	2248	2252	2302	N16	E82	.995		26.1	14	SN	3	C		27		
TEHR	20	0625	0631	0710	N17	E57	.877		24.5	45	SB	1	C		127		U F
TEHR	20	0957	1003	1007	N39	W50	.908		16.7	10	SB	1	C		64		FDE
RAMY	20	1437	1500	1541	S22	E 5	.271		21.0	64	SB	3	C		122		

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OBSERV-ATORY	OBSERVED UT				LOCATION					DURA-TION	IM-POR-TANCE	OBS.		MEASUREMENTS			REMARKS
	DATE ** NOV	START	MAX. PHASE	END	APPROX. LAT.	APPROX. MER. DIST.	CENTRAL DISTANCE	MCMATH PLAGE REGION	CMP DAY	MIN.		CORD.	TYPE	TIME UT	MEAS. AREA Mill. of Disk	CORR. AREA Sq. Deg.	
PALE	20	2151E	2152U	2208D	N16	E50	.815		24.7	17D	SB	3	C		55		U F
TEHR	21	0946	0949	0959	N39	W60	.951		16.9	13	SB	1	C		64		FDE
RAMY	21	1208	1218	1230	N39	W66	.972		16.6	22	SN	3	C		35		
RAMY	21	1336	1341	1352	S28	E16	.436		22.8	16	SN	4	C		22		F
RAMY	21	1348	1348	1352	N38	W69	.979		16.4	4	SN	4	C		12		
RAMY	21	1413	1415	1428	N38	W69	.979		16.4	15	SN	4	C		11		
RAMY	21	1517	1525	1539	N38	W69	.979		16.5	22	SB	4	C		31		FDE
RAMY	21	1535	1537	1608	S16	E 4	.170		21.9	33	SB	4	C		60		F
RAMY	21	1543	1544	1551	N38	W69	.979		16.5	8	SB	4	C		17		
RAMY	21	1554	1558	1609	N38	W69	.979		16.5	15	SN	4	C		22		
RAMY	21	1645	1647	1658	N38	W70	.981		16.4	13	SB	4	C		19		
RAMY	21	1911	1913	1922	N38	W70	.981		16.5	11	SN	3	C		16		
RAMY	21	1951	1952	1959	N38	W71	.984		16.5	8	SB	3	C		21		F
RAMY	21	2009	2012	2023	N38	W71	.984		16.5	14	SB	3	C		16		
PALE	21	2018	2020	2023	N39	W68	.977		16.7	5	SN	3	C		37		FDE
MONT	22	0850	0855	0902	N38	W82	.999		16.2	12	SN		C	0855	70		
MONT	22	1004	1006	1012	N38	W82	.999		16.3	8	SN		C	1006	50		
TEHR	24	0452	0457	0719	N16	E58	.882		28.6	147	SB	2	C		130		F
TEHR	24	0652	0657	0719	N16	E58	.882		28.6	27	SB	2	C		130		F
MANI	24	0708E	0713U	0725	N13	E61	.898		28.9	17D	SF	3	V		80	1.5	
MONT	24	1054	1057	1101	S13	W33	.544		22.0	7	SF		C	1057	50		
RAMY	24	1439	1440	1443	S12	W34	.557		22.1	4	SN	3	C		26		
RAMY	24	1757	1802	1813	S13	W37	.600		22.0	16	SB	4	C		54		
PALE	24	1759	1800	1810	S13	W37	.600		22.0	11	SN	3	C		33		DE F
RAMY	24	1826	1826	1836	N15	E47	.783		28.3	10	SN	4	C		20		
PALE	25	0236	0000	0247	S29	W27	.552		23.1	11	SN	1	C		8		DE
TEHR	25	0423	0427	0448	N13	E42	.723		28.3	25	SB	2	C		95		F
MCMA	25	1720E		1732D	N09	E59	.874	15681	2.1	12D	SN		C	1725	50	1.0	E
RAMY	25	1722	1728	1740	N 8	E57	.855		2.0	18	SB	3	C		82		
MANI	26	0617E	0617U	0626D	N14	E33	.629		28.7	9D	SF	3	V		60	.7	F
RAMY	26	1139	1140	1209	N 8	E47	.758		2.0	30	SN	3	C		20		
HOLL	26	1759	1800	1809	N10	E22	.467		28.4	10	SB	3	C		33		FDE
PALE	26	2353	2355	0001	N12	W29	.568		24.8	8	SN	3	C		21		DE
TEHR	27	0520E	0525	0540	N12	W31	.592		24.9	20D	SB	1	C		127		UDE
RAMY	27	1441E	1454	1516D	N11	W38	.669		24.8	35D	SB	3	C		36		
RAMY	27	1457	1502	1516D	N12	E41	.708		2.7	19D	SF	3	C		47		
RAMY	27	1758	1802	1818	N12	W39	.685		24.8	20	SB	3	C		23		F
PALE	27	1858	1858	1909	N12	W40	.697		24.8	11	SN	3	C		21		DE F
PALE	27	1915	1922	1945	N12	W40	.697		24.8	30	SB	3	C		46		DE F
RAMY	27	1920	1921	1941	N11	W40	.692		24.8	21	SB	3	C		35		
RAMY	27	2008	2010	2017	N21	W71	.966		22.5	9	SN	3	C		12		
PALE	27	2013	2013	2017	N12	W40	.697		24.8	4	SN	3	C		19		DE F
PALE	27	2026	2028	2032	N12	W40	.697		24.9	6	SN	3	C		26		DE F
RAMY	27	2026	2034U	2034D	N21	W71	.966		22.5	8D	SN	3	C		16		
PALE	27	2050	2052	2055	N12	W41	.708		24.8	5	SN	3	C		29		DE F
PALE	27	2207	2207	2220	N12	W42	.719		24.8	13	SN	3	C		21		DE F
MANI	28	0256E	0258	0318	N12	W44	.741		24.8	22D	SN	3	P		80	1.1	F
PALE	28	0257E	0257U	0315D	N11	W46	.758		24.7	18D	SB	3	C		50		FDE
MANI	28	0530	0532	0609	N15	E52	.830		4.1	39	SN	3	P		120	1.9	
RAMY	28	1134	1136	1252	N11	W48	.778		24.9	78	SF	3	C		19		F
RAMY	28	1134	1200	1252	N11	W48	.778		24.9	78	SB	3	C		36		F
RAMY	28	1259	1300	1307	N11	W48	.778		24.9	8	SN	3	C		16		F
RAMY	28	1313	1314	1533	N12	W48	.782		25.0	140	SN	3	C		16		F
RAMY	28	1313	1438	1533	N12	W48	.782		25.0	140	SB	3	C		40		F
RAMY	28	1334	1335	1351	S13	W 1	.102		28.5	17	SN	3	C		20		
RAMY	28	1607	1612	1636	N11	W50	.798		24.9	29	SB	3	C		63		DE
RAMY	28	1721	1721	1728	N11	W51	.808		24.9	7	SB	3	C		16		F
MCMA	28	1815	1827	1849D	N13	W54	.842	15673	24.7	34D	SN		C	1827	80	1.4	E
RAMY	28	1832	1832	1837	N11	W52	.818		24.9	5	SB	3	C		16		
RAMY	28	1905	1910	1918	N 9	E15	.375		1.9	13	SN	3	C		42		
RAMY	28	1910	1911	1916	N11	W52	.818		24.9	6	SB	3	C		20		
RAMY	28	1923	1923	1934	N11	W52	.818		24.9	11	SB	3	C		15		
RAMY	28	2006	2008	2023	N 9	E15	.375		2.0	17	SN	3	C		63		
MANI	29	0016E	0020U	0028D	N12	W56	.856		24.8	12D	SF	3	V		50	.8	F

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OBSERVATORY	OBSERVED UT				LOCATION					DURATION	IMPORTANCE	OBS.		MEASUREMENTS			REMARKS
	DATE NOV	START	MAX. PHASE	END	APPROX. LAT.	APPROX. MER. DIST.	CENTRAL DISTANCE	McMATH PLAGE REGION	CMP DAY	MIN.		CORD.	TYPE	TIME UT	MEAS. AREA Mill. of Disk	CORR. AREA Sq. Deg.	
TEHR	29	0517	0521	0550	N16	E40	.718	15682	4.2	33	2B	1	C		732		U F
MANI	29	0518E	0523	0528D	N15	E34	.648	15682	3.8	10D	1N	3	V		220	2.8	FU
RAMY	29	1202	1208	1214	N12	W61	.896		24.9	12	SB	2	C		34		
RAMY	29	1431	1433	1437	S16	E58	.842		6.0	6	SB	3	C		45		F
MCMA	29	1518	1523	1529	S20	E56	.826	15687	5.8	11	SB		C	1523	50	1.0	D
RAMY	29	1519	1524	1530	S16	E57	.833		5.9	11	SB	3	C		67		
MCMA	29	1524	1526	1540	S20	E76	.963	15687	7.3	16	SN		C	1526			D
RAMY	29	1655	1657	1707	N14	E28	.573		3.8	12	SN	3	C		31		
RAMY	29	1708	1709	1712	N11	W64	.915		24.9	4	SB	3	C		29		
RAMY	29	1719	1720	1728	S16	E56	.823		5.9	9	SN	3	C		16		
RAMY	29	1748	1748	1754	S16	E56	.823		5.9	6	SN	3	C		14		
RAMY	29	1759	1839	1850	S16	E56	.823		5.9	51	SB	3	C		38		
PALE	29	1947E	1948U	2003D	S18	E58	.842		6.2	16D	SB	3	C		40		FDE
HOLL	29	2153	2155	2210	S16	E56	.823		6.1	17	SB	3	C		89		DE
HOLL	29	2255	2257	2300D	S16	E55	.813		6.1	5D	SB	2	C		61		DE
TEHR	30	0640E	0641U	0651	S14	E43	.679		5.5	11D	SB	2	C		127		
TEHR	30	1034	1038	1053	N17	E19	.518		3.9	19	SB	2	C		95		F
TEHR	30	1044	1048	1107	S15	E48	.739		6.0	23	SB	2	C		135		
RAMY	30	1504	1509	1540	S17	E43	.683		5.9	36	SN	3	C		21		
MCMA	30	1543	1546	1605	S18	E45	.708	15687	6.0	22	SN		C	1546	40	.6	E
RAMY	30	1544	1545	1603D	S17	E43	.683		5.9	19D	SB	3	C		39		
RAMY	30	1723	1730	1749	S17	E42	.671		5.9	26	SN	3	C		84		
MCMA	30	1801		1808D	S18	E45	.708	15687	6.1	7D	SN		C	1802	40	.6	E
RAMY	30	1802	1802	1808D	S17	E41	.658		5.8	6D	SB	3	C		70		
HOLL	30	1856	1856	1911	S16	E44	.693		6.1	15	SB	3	C		20		

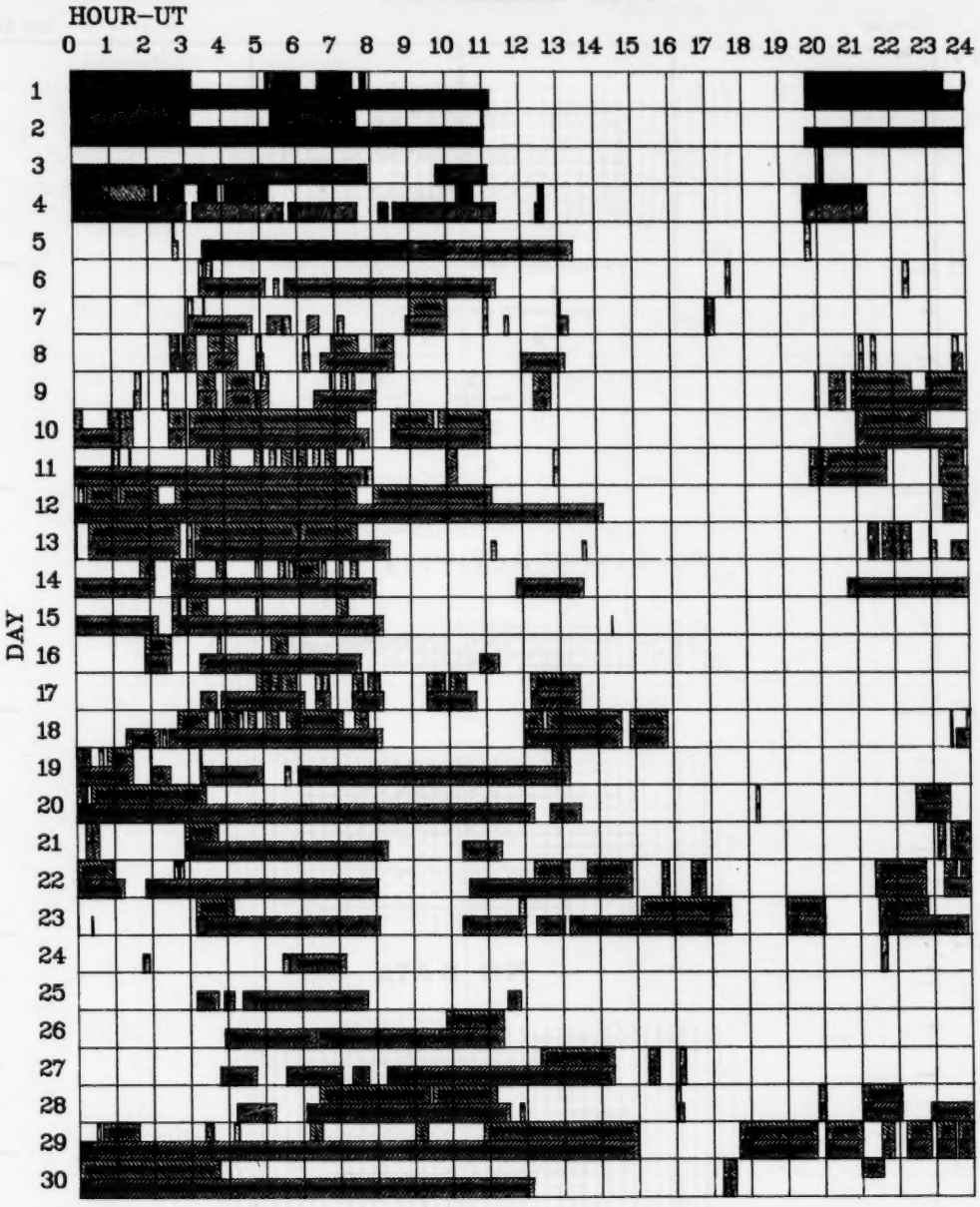
"Remarks":

A = Eruptive prominence whose base is less than 90° from central meridian.
B = Probably the end of a more important flare.
C = Invisible 10 minutes before.
D = Brilliant point.
E = Two or more brilliant points.
F = Several eruptive centers.
G = No visible spots in the neighborhood.
H = Flare accompanied by a high speed dark filament.
I = Active region very extended.
J = Distinct variations of plage intensity before or after the flare.
K = Several intensity maxima.
L = Existing filaments show signs of sudden activity.
M = White-light flare.
N = Continuous spectrum shows effects of polarization.
O = Observations have been made in the calcium II lines H and K.
P = Flare shows helium D_3 in emission.
Q = Flare shows the Balmer continuum in emission.
R = Marked asymmetry in Hα line suggests ejection of high velocity material.
S = Brightness follows disappearance of filament (same position).
T = Region active all day.
U = Two bright branches, parallel (||) or converging (Y).
V = Occurrence of an explosive phase: important and abrupt expansion in about a minute with or without important intensity increase.
W = Great increase in area after time of maximum intensity.
X = Unusually wide Hα line.
Y = System of loop-type prominences.
Z = Major sunspot umbra covered by flare.

INTERVALS OF NO FLARE PATROL OBSERVATION

FOR PRECEDING SOLAR FLARE TABLE

NOVEMBER 1978



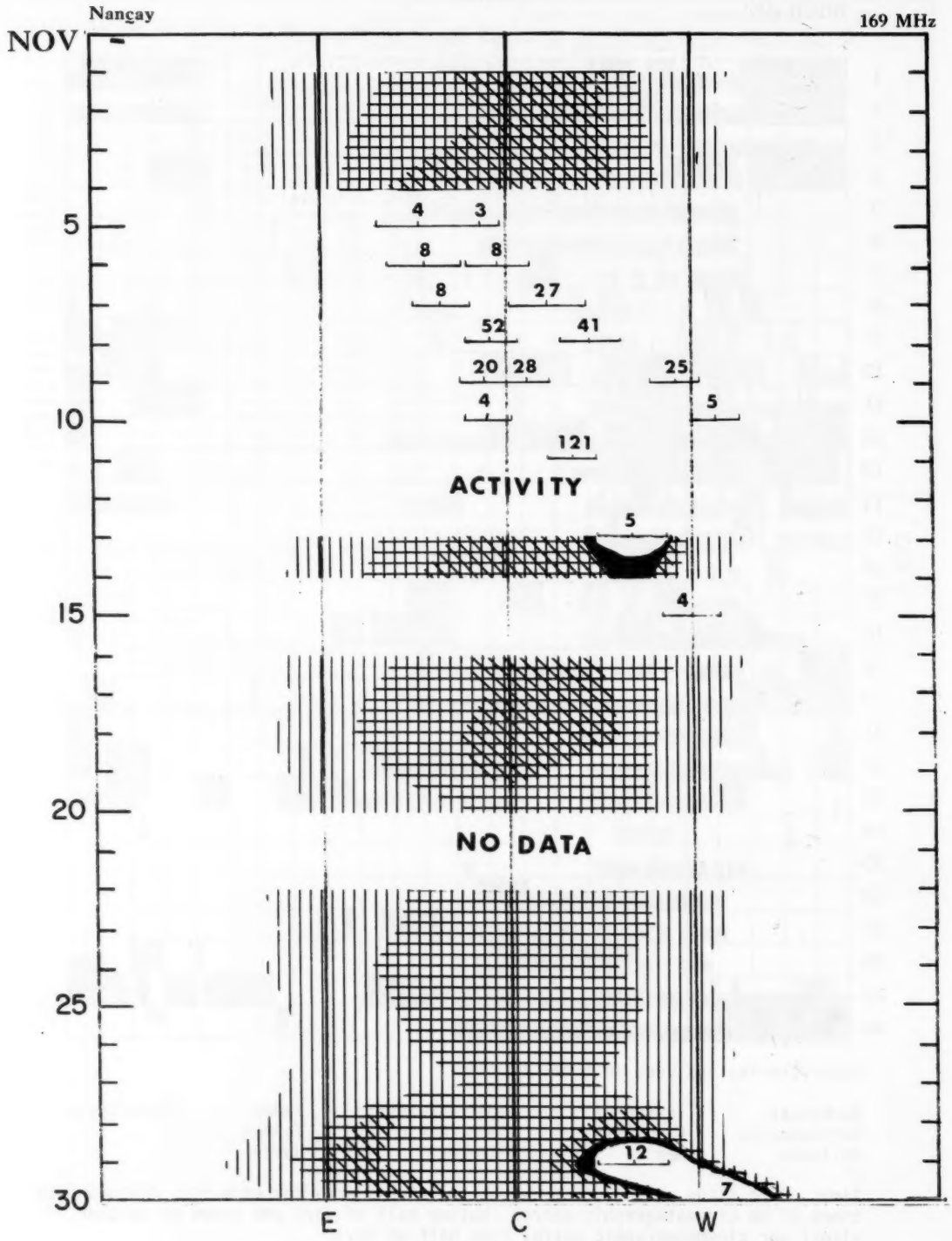
Observatories included in total patrol:

Bucharest	Istanboul	McMath-Hulbert	Ramey	Wendelstein
Herstmonceux	Kandilli	Monte Mario	Tehran	
Holloman	Manila	Palehua	Upice	

Times of no flare patrol are shown by the shaded area for each day, divided into times of no cinematographic patrol (bottom half of day) and times of neither visual nor cinematographic patrol (top half of day).

SOLAR RADIO EMISSION
INTERFEROMETRIC OBSERVATION

NOVEMBER 1978

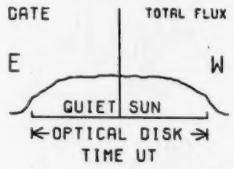


EAST-WEST SOLAR SCANS

NOVEMBER 1978

TOYOKAWA, JAPAN

3 CM
FAN BEAM WITH 1.1 MINUTES OF ARC



1 303
0234 UT

2 311
0234 UT

3 312
0234 UT

4 315
0234 UT

5 318
0234 UT

6 320
0234 UT

7 312
0234 UT

8 310
0234 UT

9 318
0234 UT

10 336
0234 UT
During burst

11 322
0235 UT

12 315
0235 UT

13 317
0235 UT

14 305
0235 UT

15 302
0235 UT

16 299
0235 UT

17 304
0235 UT

18 302
0236 UT

19 303
0236 UT

20 299
0236 UT

21 298
0236 UT

22 303
0236 UT

23 304
0237 UT

24 301
0237 UT

25 298
0237 UT

26 305
0238 UT

27 310
0238 UT

28 317
0238 UT

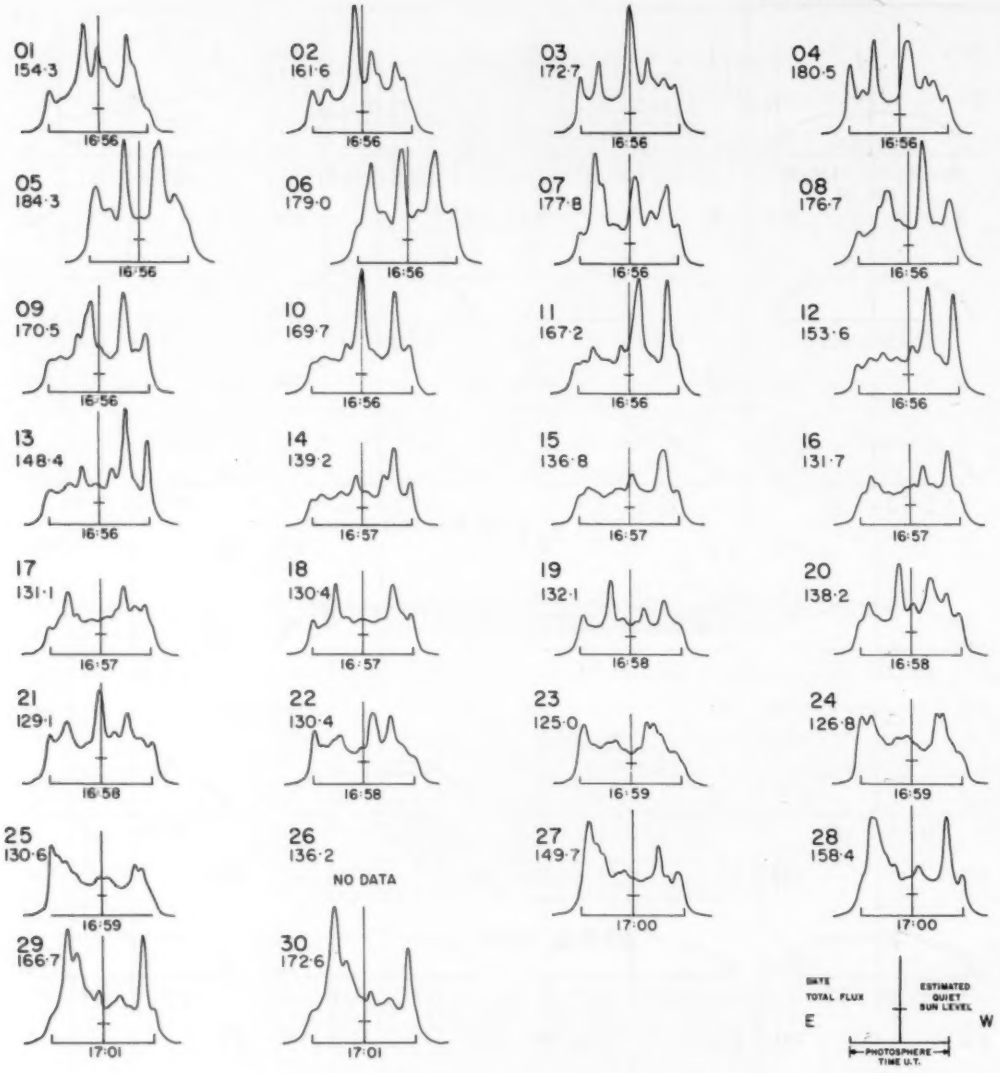
29 333
0239 UT

30 336
0239 UT
During burst

EAST-WEST SOLAR SCANS
NOVEMBER 1978

ALGONQUIN RADIO OBSERVATORY
CANADA

10·7cm
Fan Beam with 1·5 minutes of arc
E-W Resolution

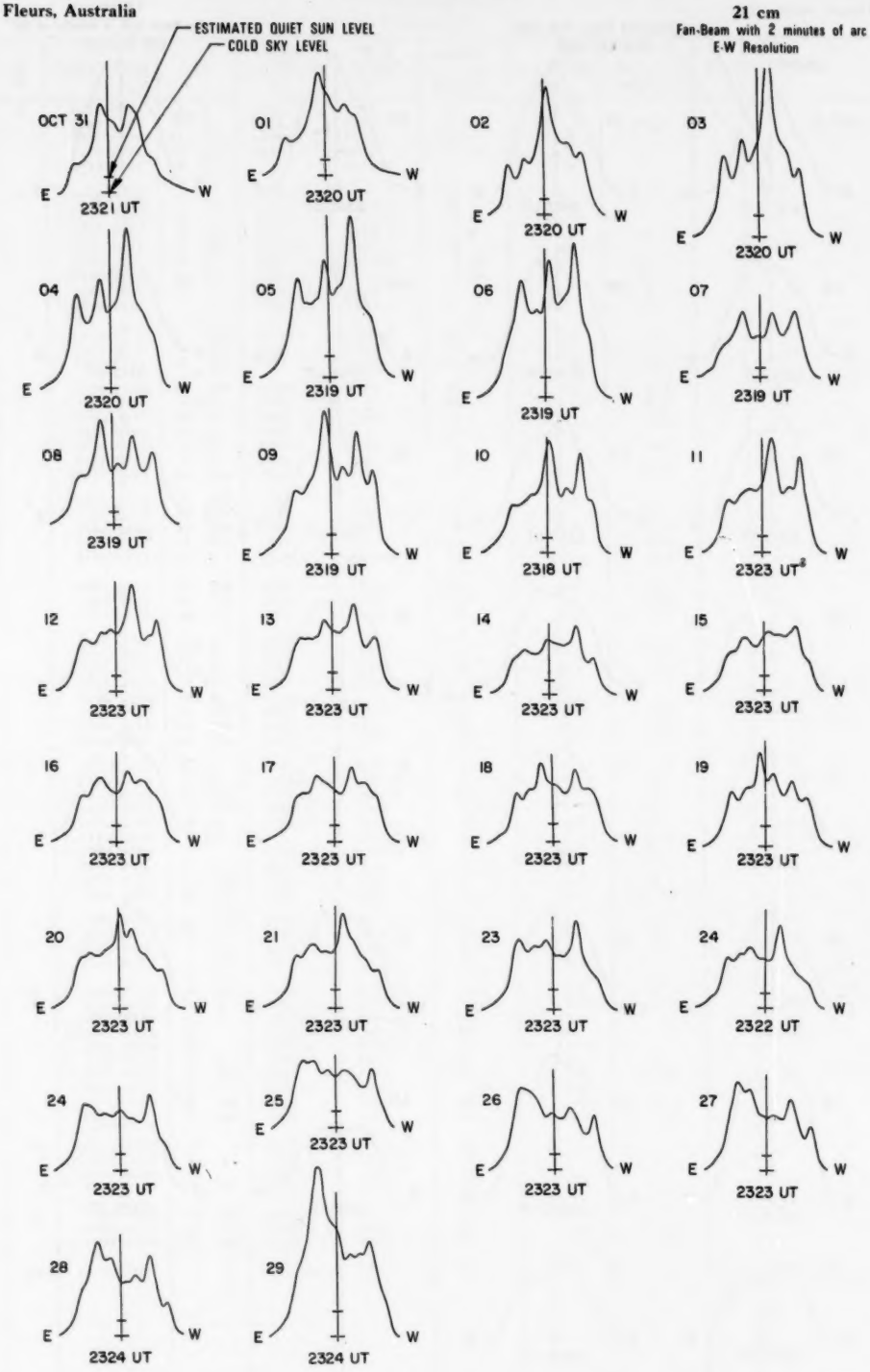


EAST-WEST SOLAR SCANS

NOVEMBER 1978

Fleurs, Australia

21 cm
Fan-Beam with 2 minutes of arc
E-W Resolution

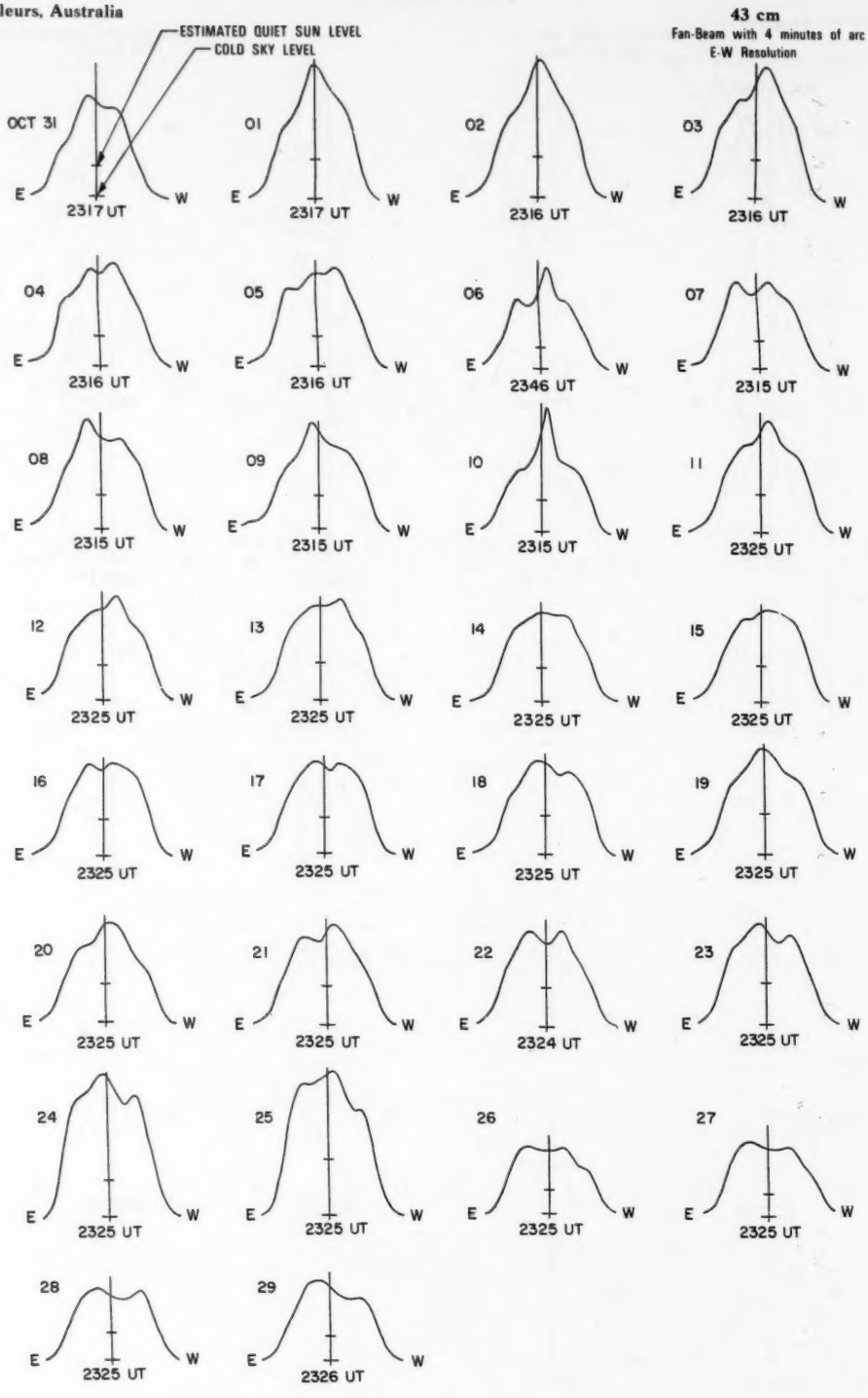


EAST-WEST SOLAR SCANS

NOVEMBER 1978

Fleurs, Australia

43 cm
Fan-Beam with 4 minutes of arc
E-W Resolution



SOLAR RADIO EMISSION
SELECTED FIXED FREQUENCY EVENTS

NOVEMBER 1978

NOV 1978	FREQUENCY	STATION	TYPE	STARTING TIME UT	TIME OF MAXIMUM UT	DURATION MINUTES	FLUX DENSITY 10^{-22} Wm^{-2} Hz^{-1} PEAK	FLUX DENSITY MEAN	INT	REMARKS	
1	2800	OTTA	40 F	1325	1339	30	15.8				
	8800	SGMR	45 C	1506.9	1507	.8	198	59.4			4
	2800	OTTA	20 GRF	1800	1920	120	3.2	2			
	2695	PENT	20 GRF	2100	2159	120 D	8.8				
	8800	SGMR	45 C		1507.5		171.6				4
2	10400	BERN	1	1359.7	1404.7	16	9			OPR	
	8900	BERN	1	1359.7	1404.4	16	15			OPR	
	8400	BERN	1	1359.7	1404.7	16	16			OPR	
	2695	PENT	4 S/F	1706	1708.7	3.5	11.8	4			
	2800	OTTA	29 PBI	1709.5	1709.5	50	3.6				
	2695	BOUL	45 C	1817 E	1818.5	2.5D	117	39			
	2695	BOUL	45 C	1845 E	1845.5	3.5D	31	10			
	2695	BOUL		1845 E	1848		26	9			
	2695	BOUL		1845 E	1847		31	10			
3	2800	OTTA	20 GRF	1553.5	1554.5	17	3.2	1.6			
	2800	OTTA	20 GRF	1850	1920	70	3	1.5			
	2695	PENT	20 GRF	2047	2120	110	3.8	1.9			
4	2800	OTTA	20 GRF	1553	1605	30	3.6	1.8			
	2800	OTTA	27AFRF	1940		100	3	2.8			
	2800	OTTA	24 R	1940	1945	5	3	1.5			
	2800	OTTA	24P R	1945		85	3				
	2800	OTTA	1 S	2047	2052	10	3	1.5			
	2800	OTTA	1 S	2100	2101.5	9	3	1.5			
	2695	PENT	26 FAL	2110	2120	10	-3	-1.5			
5	2800	OTTA	22 GRF	1500	1505	30	3.6	2.7			
	2800	OTTA	20 GRF	1615	1621	20	3	2			
	2800	OTTA	20 GRF	1754	1802	30	2.8	1.4			
	2800	OTTA	21 GRF	1830		150	4.8	2.4			
	2800	OTTA	45 C	1912	1913.2	12	17	5.8			
6	2800	OTTA	20 GRF	1530	1710	150	3.6	2			
	2800	OTTA	26 FAL	1800	1830	30	-3	-1.5			
	2800	OTTA	20 GRF	1910	2000	100	3.2	1.6			
7	2800	OTTA	27A RF	1605		405	14.2				
	2800	OTTA	24 R	1605	1640	35	14.2	7.1			
	2800	OTTA	1A S	1618	1619	8	3.2	1.6			
	2800	OTTA	8 S	1620	1620	.1E	60				
	2800	OTTA	24P R	1640		285	14.2				
	2800	OTTA	20 GRF	1837	1840	11	2.6	1.3			
	2800	OTTA	20 GRF	1900	1910	53	3	1.5			
	2695	PENT	26 FAL	2125	2250	85	-8.2	-4.1			
8	2800	OTTA	24O R	1356	1400	4	3.6	1.8			
	2800	OTTA	1 S	1648.5	1649.5	2	9.6	6			
	2800	OTTA	29 PBI	1649.5	1649.5	45	5	3			
	2800	OTTA	4 S/F	1750.5	1752	4.5	88	46			
	2695	SGMR	3 S	1750.5	1751.8	4.5	12.5	50		3G,SWF	2
	8800	SGMR	3 S	1751	1751.8	2	62	24.8		3G,SWF	2
	2695	BOUL		1752 E	1753.5		94	31			
	2695	BOUL	45 C	1752 E	1753	5 D	94	31			
	2800	OTTA	29 PBI	1755	1755	8	6.2	3			
	2800	OTTA	26 FAL	1835	1935	60	-3	-1.5			
9	2800	OTTA	20 GRF	1500	1549	180	6	3			
	2800	OTTA	3 S	1906.5	1908	3.5	13	4			
	2695	BOUL	3 S	1907 E	1908.5	3.5D	21	7			
	2800	OTTA	1 S	1937	1938.2	4	7.2	3.2			
10	2695	MANI	4 S/F	0134.2	0139.9	14.1	94.5	63			1
	2695	MANI	4 S/F	0236.7U	0237.9U	1.6U	10.5U	3 U		DRIFT	2
	8400	BERN	20	1357.4	1404.4	30	19				
	10400	BERN	20	1357.4	1404.4	30	20				
	8900	BERN	20	1357.4	1404.4	30	21				
	2800	OTTA	3 S	1358	1400	3	10	5			
	2800	OTTA	30 PBI	1401	1401	179	7.2	3.6			
	2800	OTTA	8 S	1533.7	1534	.9	10.8				
	2800	OTTA	22 GRF	1715	1749	115	7.2	3.6			
	2800	OTTA	20 GRF	1930	1950	55	2.8	2.1			
11	10400	BERN	8	0858.2	0859.1	4	127				
	10400	BERN	4	1028.1	1029.4	3	24				
	10400	BERN	8	1216.1	1216.8	2	15				
	2800	OTTA	20 GRF	1820	1833	20	2.2	1.1			
12	2800	OTTA	20 GRF	1336.5	1337	13	3.6	2			
	2800	OTTA	20 GRF	1430	1433	25	1.8	.9			
	2800	OTTA	26 FAL	1520	1555	35	-2.8	-1.4			
13	10400	BERN	3	0820.4	0823	20	28			OPR	

SOLAR RADIO EMISSION
SELECTED FIXED FREQUENCY EVENTS
NOVEMBER 1978

NOV 1978	FREQUENCY	STATION	TYPE	STARTING TIME	TIME OF MAXIMUM	DURATION	FLUX DENSITY $10^{-22}Wm^{-2}Hz^{-1}$		INT	REMARKS
				UT	UT	MINUTES	PEAK	MEAN		
	2800	OTTA	20 GRF	1849.5	1851	20	1.8	.9		
15	2695	MANI	1 S	0753	0753.5	1	4.3	1.4		1
	8800	MANI	4 S/F	0753	0753.3	1	49.5	16.5		1
	2800	OTTA	20 GRF	1320	1400	100	3	1.5		
	2800	OTTA	26 FAL	1530	1600	30	3	1.5		
	2800	OTTA	20 GRF	1756	1800	30	2.6	1.2		
	2800	OTTA	240AR	1900	1950	50	3.4	1.7		
	2800	OTTA	22 GRF	1924	1930	25	7	3.5		
	2695	PENT	20 GRF	2040	2115	90	2	1.2		
	2695	BOUL	4 SF	2116.5E	2118.5	2 D	30	10		
16	2800	OTTA	8 S	1654.6	1654.6	.2	5			
	2800	OTTA	20 GRF	1745	1810	60	4.8	2.4		
18	8800	SGMR	3 S	1816.3	1816.5	.4	67.5	20.3		2
	8800	SGMR	3 S	1844	1844.2	2	297	89.1		3
	2800	OTTA	1 S	1904.7	1905.5	1.8	1.4	.9		
19	2800	OTTA	20 GRF	1340	1402	60	2.6			
	2800	OTTA	20 GRF	1555	1610	30	1.4	.7		
	2800	OTTA	1 S	1932	1932.4	1	2.8	1.2		
20	2800	OTTA	24 R	1435	1610	105	10.4	4		
	2800	OTTA	27 RF	1435		375	10.4			
	2800	OTTA	24P R	1610		160	10.4			
	2800	OTTA	26 FAL	1900	2050	110	3.8	1.9		
	2695	PENT	1 S	2150.2	2151	2	1.6	.8		
	2695	PENT	3 S	2201	2201.9	2	52	6.6		
	2695	BOUL	3 S	2202	2204	7	44	15		
21	2800	OTTA	20 GRF	1535	1545	35	1.8	.9		
22	2800	OTTA	8 S	1824.9	1825	.5	1.2			
24	2800	OTTA	20 GRF	1750	1910	210	3.6	2		
25	2800	OTTA	20 GRF	1435	1655	235	2.6	1.3		
26	2800	OTTA	240 R	1730	1800	30	2	1		
27	2800	OTTA	240 R	1440	1450	10	1.2	.6		
	2800	OTTA	20 GRF	1550	1615	80	2.6	1.3		
	2800	OTTA	20 GRF	1840	1915	100	1.8	1		
28	2695	MANI	4 S/F	0529.2	0547	24.4	93.5	31.2		1
	10400	BERN	3	0812	0812.3	1.5	17			
	2695	MANI	3 S	0812.5	0813	2.1	33.4	11.1		3
	10400	BERN	41	1025	1028.7	5	10			OPR
	2800	OTTA	240 R	1750	1800	10	1.4	.7		
	2800	OTTA	8 S	1848.9	1849	.5	1.8			
	2800	OTTA	45 C	1909	1910.1	3	5.6	1.8		
	2695	BOUL	45 C	1913.5E	1914.5	1.5D	16	5		
	2800	OTTA	240 R	1920	1950	30	2.8	1.4		
	2695	MANI	1 S	2358.3	2358.5	.7	2.9	1		4
29	2695	MANI	4 S/F	0508.7	0513.3	9.1	72.2	24.1		1
	2800	OTTA	24 R	1555	1605	10	2.4	1.2		
	2800	OTTA	27 RF	1555		80	2.4	2		
	2800	OTTA	24P R	1605		50	2.4			
	2800	OTTA	26 FAL	1655	1715	20	-2.4	-1.2		
	2800	OTTA	2 S/F	1936	1938	3	5	2.5		
	2800	OTTA	30 PBI	1939	1939	16	2.4	1.2		
	2800	OTTA	1 S	1943.5	1944	2.5	2.4	1.2		
	2800	OTTA	2 S/F	2024	2024.5	2	3			
	2695	PENT	20 GRF	2125	2137	20	2.2	1.1		
30	2695	MANI	3 S	0117.2	0117.7	1.2	18.5	6.2		IIIG 1
	2695	MANI	4 S/F	0149.6	0158.8	20.3	68.2	22.7		2
	2800	OTTA	21 GRF	1440	1535	130	4.2	2.4		
	2800	OTTA	1 S	1519	1520.8	3	2.6	1.3		
	2800	OTTA	1 S	1801.8	1802.2	2	5.6	1.8		
	2800	OTTA	26 FAL	1805	1825	20	3	1.5		

Observatories:

BERN = Berne BOUL = Boulder MANI = Manila OTTA = Ottawa ARO PENT = Penticton SGMR = Sagamore Hill

Explanation of Type Code:

1 Simple 1
2 Simple 1F
3 Simple 2
4 Simple 2F
5 Simple
6 Minor
7 Minor +
8 Spike
20 Simple 3
21 Simple 3A
22 Simple 3F
23 Simple 3AF
24 Rise
25 Rise A
26 Fall
27 Rise and Fall
28 Precursor
29 Post Burst Increase
30 Post Burst Increase A
31 Post Burst Decrease
32 Absorption
40 Fluctuation
41 Group of Bursts
42 Series of Bursts
43 Onset of Noise Storm
44 Noise Storm in Progress
45 Complex
46 Complex F
47 Great Burst
48 Major
49 Major +

SOLAR X-RAYS BY SATELLITE
SMS GOES
NOVEMBER 1978

.5 - 4Å Hourly Averages (10^{-5} watts/m^2)

MC DA	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Mean
11/ 1	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	.002	.016	.014	.001	.008
11/ 2	B	B	.003	B	B	B	.007	.003	B	B	B	.004	B	B	.004	B	B	.002	.001	.002	.002	.002	.002	.002	.002
11/ 3	.037	.003	.002	.002	.001	.002	.002	.001	.001	.001	M	M	M	M	M	.002	.002	.002	.001	.002	.002	.001	.002	.003	.004
11/ 4	B	.001	.002	B	.002	M	B	B	.001	.002	.001	.001	.002	.003	.004	.002	.001	B	B	.001	.002	.001	.001	B	.001
11/ 5	B	B	B	.001	M	B	.002	.001	B	B	B	B	B	B	B	.005	.001	.001	.001	.005	.002	.002	.001	.001	.001
11/ 6	.001	B	B	.001	.001	B	B	B	B	B	B	B	.002	B	B	.003	.004	.001	B	.001	B	B	B	.003	.001
11/ 7	.001	B	B	.001	B	B	B	B	.002	B	.002	.001	.001	.001	B	B	.018	.009	.003	.003	.001	.003	B	.002	.002
11/ 8	.001	.002	.002	.001	.002	B	B	.002	.001	B	M	M	M	M	M	.001	.005	.005	.001	.001	.001	M	M	.001	.002
11/ 9	.001	B	.001	.001	B	.002	B	.001	B	B	B	.003	.001	B	.001	.002	.002	B	B	.002	.001	.002	.001	B	.001
11/10	.015	.109	.024	.009	.003	.001	.002	.002	.001	.001	B	B	.001	.002	.046	.002	B	.009	.003	.004	.002	.001	.003	.002	.010
11/11	.001	.002	.002	.003	.001	B	.002	B	.001	.001	.003	B	.002	B	.002	B	B	.001	B	.002	.002	.001	.001	B	.001
11/12	B	B	B	.001	.001	.001	B	B	B	B	B	B	B	.002	.001	B	B	B	.001	B	B	B	B	B	B
11/13	B	B	B	B	.002	B	B	.001	.007	.002	.002	B	B	B	B	B	.002	B	.001	.001	B	.001	M	B	.001
11/14	B	B	B	B	.001	B	.001	B	B	B	B	.002	.002	.001	B	B	B	B	B	B	.001	.001	.001	.001	B
11/15	.001	B	B	B	B	B	B	B	B	B	.003	.022	.004	.002	.002	B	B	.001	.004	.013	.005	.003	.002	.003	.003
11/16	B	.001	B	B	B	B	.005	B	.007	.424	.285	.051	B	.117	.417	.083	B	B	.003	.001	.001	B	B	.054	.060
11/17	B	B	B	B	B	.209	B	B	B	B	B	B	B	B	B	B	.003	B	.010	B	B	B	.048	.010	.012
11/18	.279	.318	B	B	B	.002	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	.025
11/19	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	.002	B	B	B	B	B	B	.001	B	B
11/20	B	B	B	B	B	B	.002	.001	B	.254	.599	.415	.219	.005	.147	.008	M	.003	.002	.002	.002	.002	.002	.003	.072
11/21	B	B	B	B	B	B	.001	B	.001	B	B	M	B	B	B	.001	.002	B	.002	.001	.001	B	B	B	B
11/22	B	B	B	B	B	B	B	.002	B	B	B	B	B	B	B	B	B	B	B	B	.026	B	.001	B	B	.002
11/23	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
11/24	B	B	B	B	B	B	.001	.002	B	B	B	B	.005	B	B	B	.015	.001	.002	B	B	B	.015	.007	.002
11/25	.002	B	B	B	.001	B	B	B	B	B	B	B	B	B	.011	.001	B	B	.003	B	B	B	B	B	.001
11/26	B	B	B	B	B	B	B	B	.021	B	B	B	B	.017	B	B	B	B	.001	.002	.002	.001	.003	.001	.002
11/27	.001	.001	B	.002	.002	.002	B	B	.006	.003	.001	M	M	M	.005	B	.002	B	.001	.002	.002	.001	.001	B	.002
11/28	B	B	.006	.008	.002	.086	.054	.008	.011	.002	.034	.001	.001	.035	.002	.002	.001	.001	.002	.003	.002	.002	.001	.002	.011
11/29	.003	.004	.003	.002	.002	.086	.004	.001	.002	.003	B	.002	.002	.001	.002	.002	B	B	.001	.005	.001	.002	.002	.017	.006
11/30	.031	.011	.031	.002	.002	B	.003	.002	.002	.002	.003	.002	.003	.002	.001	.005	.002	.002	.002	B	.002	B	.001	.001	.005

Note: "B" indicates the flux was below the cut-off levels.
"M" denotes periods of missing data.

SOLAR X-RAYS BY SATELLITE
SMS GOES
NOVEMBER 1978

1 - 8Å Hourly Averages (10^{-4} watts/m^2)

MO DA	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Mean
11/ 1	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	.011	.032	.042	.017	.017
11/ 2	.009	.007	.013	.008	.008	.009	.017	.018	.009	.007	.008	.016	.010	.009	.016	.010	.009	.012	.010	.012	.013	.012	.015	.016	.007
11/ 3	.045	.022	.012	.013	.011	.013	.014	.011	.011	.011	M	M	M	M	M	.012	.011	.011	.010	.012	.011	.011	.012	.014	.009
11/ 4	.010	.010	.011	.009	.013	M	.009	.008	.010	.013	.010	.010	.013	.014	.021	.015	.013	.010	.009	.010	.011	.010	.011	.008	.006
11/ 5	.008	.007	.007	.009	M	.009	.012	.011	.008	.007	.010	.010	.010	.010	.010	.019	.011	.011	.011	.017	.012	.012	.011	.011	.006
11/ 6	.011	.009	.009	.010	.010	.009	.009	.009	.009	.010	.008	.008	.012	.010	.009	.015	.012	.011	.009	.009	.009	.008	.008	.011	.006
11/ 7	.010	.008	.009	.010	.010	.008	.007	.008	.010	.009	.013	.011	.011	.011	.010	.010	.043	.035	.024	.024	.016	.020	.011	.013	.008
11/ 8	.011	.011	.011	.010	.011	.008	.008	.011	.011	.009	M	M	M	M	M	.016	.016	.019	.010	.010	.010	M	M	.011	.007
11/ 9	.010	.009	.010	.010	.009	.011	.010	.010	.009	.010	.009	.017	.012	.010	.010	.015	.012	.010	.009	.011	.010	.010	.009	.008	.006
11/10	.024	.134	.066	.035	.024	.017	.015	.013	.011	.011	.010	.009	.010	.012	.046	.013	.010	.023	.014	.015	.012	.011	.015	.015	.017
11/11	.012	.013	.015	.015	.011	.009	.012	.010	.010	.010	.012	.009	.010	.010	.010	.009	.008	.009	.009	.011	.012	.010	.010	.009	.006
11/12	.009	.007	.008	.010	.010	.009	.009	.009	.008	.008	.007	.008	.008	.010	.008	.006	.006	.007	.008	.006	.006	.007	.006	.007	.004
11/13	.007	.006	.007	.006	.008	.007	.007	.007	.012	.009	.009	.007	.006	.007	.007	.006	.007	.007	.007	.007	.007	.008	M	.008	.004
11/14	.006	.006	.006	.007	.008	.008	.008	.007	.005	.005	.005	.008	.010	.007	.005	.005	.005	.005	.006	.007	.007	.008	.008	.008	.004
11/15	.008	.007	.006	.007	.005	.005	.004	.005	.009	.005	.009	.041	.021	.013	.011	.008	.006	.007	.013	.025	.021	.014	.011	.013	.007
11/16	.006	.006	.007	.006	.006	.005	.016	.006	.017	1.06	1.20	.244	.006	.412	1.17	.223	.006	.006	.012	.006	.006	.006	.007	.252	.128
11/17	.005	.005	.007	.015	.005	.510	.007	.005	.005	.005	.004	.004	.004	.004	.004	.004	.010	.004	.019	.004	.004	.004	.211	.127	.026
11/18	.907	1.06	.004	.005	.004	.008	.003	.003	.004	.004	.004	.004	.003	.003	.003	.004	.003	.004	.004	.005	.004	.004	.004	.005	.055
11/19	.004	.004	.005	.004	.004	.004	.004	.004	.005	.005	.005	.004	.004	.005	.005	.008	.006	.004	.004	.004	.004	.004	.004	.004	.002
11/20	.006	.004	.004	.003	.004	.005	.010	.007	.005	.515	1.04	.676	.315	.202	.392	.474	M	.014	.012	.011	.012	.010	.009	.014	.116
11/21	.008	.006	.006	.006	.006	.007	.007	.005	.007	.006	.005	M	.005	.009	.006	.007	.009	.006	.008	.006	.006	.005	.005	.004	.004
11/22	.005	.006	.005	.005	.005	.004	.005	.008	.005	.005	.005	.005	.005	.008	.006	.005	.005	.004	.004	.004	.004	.004	.004	.004	.003
11/23	.003	.004	.004	.003	.004	.003	.004	.003	.004	.003	.003	.004	.004	.004	.003	.003	.004	.004	.005	.005	.004	.005	.005	.005	.003
11/24	.004	.004	.005	.004	.005	.004	.007	.010	.006	.006	.005	.006	.004	.004	.004	.005	.014	.007	.009	.008	.006	.005	.022	.019	.005
11/25	.009	.006	.006	.004	.007	.007	.006	.005	.005	.005	.005	.005	.005	.005	.021	.008	.007	.007	.009	.005	.004	.004	.004	.005	.004
11/26	.005	.004	.004	.004	.005	.005	.006	.015	.005	.004	.004	.004	.004	.013	.006	.005	.007	.007	.008	.009	.009	.009	.007	.009	.007	.004
11/27	.008	.008	.008	.011	.011	.009	.007	.007	.018	.011	.009	M	M	M	.018	.009	.010	.007	.008	.008	.008	.007	.007	.007	.006
11/28	.006	.008	.012	.024	.011	.074	.077	.028	.029	.016	.027	.011	.013	.031	.011	.013	.010	.010	.011	.012	.011	.011	.010	.012	.015
11/29	.013	.014	.014	.012	.010	.090	.020	.011	.013	.014	.010	.010	.010	.009	.011	.010	.008	.008	.009	.014	.009	.010	.010	.010	.010
11/30	.009	.019	.052	.013	.010	.009	.012	.010	.011	.012	.015	.013	.013	.013	.011	.060	.012	.013	.021	.009	.010	.009	.010	.011	.010

Note: "B" indicates the flux was below the cut-off levels.
"M" denotes periods of missing data.

SOLAR X-RAYS BY SATELLITE

GOES

NOVEMBER 1978

DAY	BEGIN TIME	.5-4A Wm^{-2}	1-8A Wm^{-2}	MAX TIME	.5-4A Wm^{-2}	1-8A Wm^{-2}	1/2P TIME	.5-4A Wm^{-2}	1-8A Wm^{-2}
1	0336	2.3E-09	5.4E-07	0359	1.5E-07	3.3E-06	0417	2.3E-08	1.8E-06
1	1150	1.6E-09	6.4E-07	1153	3.5E-08	1.2E-06	1155	1.5E-08	9.4E-07
1	1327	2.0E-08	1.2E-06	1352	8.6E-07	9.7E-06	1407	1.6E-07	5.3E-06
1	2114	2.5E-08	1.4E-06	2158	3.9E-07	6.4E-06	2230	1.1E-07	3.9E-06
2	0221	2.5E-08	1.2E-06	0224	3.9E-08	2.2E-06	0226	3.7E-08	1.5E-06
2	0233	2.7E-08	1.6E-06	0237	1.4E-07	2.9E-06	0241	4.8E-08	2.2E-06
2	0627	1.3E-08	1.0E-06	0646	1.3E-07	2.9E-06	0720	1.7E-08	1.9E-06
2	1055	2.2E-08	1.0E-06	1100	8.4E-08	1.9E-06	1144	2.3E-08	1.4E-06
2	1400	1.4E-08	1.0E-06	1405	1.9E-07	3.7E-06	1410	6.0E-08	2.1E-06
2	1931	1.5E-08	1.1E-06	1934	5.2E-08	1.9E-06	1943	3.6E-08	1.5E-06
2	2002	2.2E-08	1.3E-06	2008	8.3E-08	2.3E-06	2012	1.7E-08	1.8E-06
3	0008	1.1E-08	1.6E-06	0014	1.2E-07	3.1E-06	0018	4.3E-08	2.3E-06
3	0028	2.1E-08	1.8E-06	0033	2.0E-06	1.1E-05	0049	4.0E-07	6.6E-06
3	0350	1.6E-08	1.3E-06	0353	7.2E-08	2.1E-06	0357	2.7E-08	1.5E-06
3	0425	5.3E-09	9.1E-07	0428	6.9E-08	1.9E-06	0436	2.1E-08	1.3E-06
3	0458	6.8E-09	9.3E-07	0604	4.4E-08	2.0E-06	0629	2.5E-08	1.4E-06
3	0934	7.4E-09	9.5E-07	0938	6.6E-08	2.1E-06	0947	2.9E-08	1.5E-06
3	1420	3.2E-08	1.2E-06	1423	5.9E-08	1.9E-06	1431	3.4E-08	1.5E-06
3	1629	1.0E-08	9.9E-07	1632	4.7E-08	1.8E-06	1636	3.0E-08	1.4E-06
3	1722	8.7E-09	9.5E-07	1725	7.1E-08	2.0E-06	1735	4.2E-08	1.4E-06
3	1853	1.6E-08	1.2E-06	1856	4.3E-08	1.9E-06	1905	3.5E-08	1.5E-06
3	2011	1.9E-08	1.1E-06	2014	4.8E-08	2.1E-06	2016	3.7E-08	1.4E-06
3	2213	9.3E-09	1.0E-06	2216	6.3E-08	1.8E-06	2225	2.4E-08	1.3E-06
3	2253	3.3E-08	1.3E-06	2256	5.3E-08	2.0E-06	2300	4.6E-08	1.6E-06
4	0453	2.1E-08	1.5E-06	0456	2.4E-08	2.1E-06	0502	2.4E-08	1.5E-06
4	0910	1.8E-08	1.2E-06	0913	4.0E-08	1.9E-06	0921	3.6E-08	1.5E-06
4	1236	3.2E-08	1.4E-06	1239	3.3E-08	2.1E-06	1243	3.1E-08	1.5E-06
4	2156	1.3E-08	9.7E-07	2201	4.2E-08	2.2E-06	2208	3.1E-08	1.5E-06
5	1514	3.3E-08	1.6E-06	1521	1.5E-07	3.1E-06	1531	6.6E-08	2.3E-06
5	1913	2.5E-08	1.2E-06	1927	1.2E-07	2.4E-06	1944	3.3E-08	1.8E-06
5	2353	2.8E-08	1.4E-06	2356	3.5E-08	2.0E-06	2358	3.8E-08	1.5E-06
6	0345	1.1E-08	9.8E-07	0348	5.6E-08	1.9E-06	0400	3.3E-08	1.4E-06
6	0439	5.7E-09	9.2E-07	0443	6.2E-08	1.7E-06	0445	2.1E-08	1.1E-06
6	0702	5.9E-09	8.4E-07	0705	6.5E-08	1.4E-06	0708	1.8E-08	1.1E-06
6	1221	6.2E-09	8.7E-07	1227	1.7E-07	3.3E-06	1230	3.9E-08	1.8E-06
6	2328	3.0E-08	1.0E-06	2331	8.2E-08	1.8E-06	2351	3.6E-08	1.4E-06
7	1131	9.2E-09	1.0E-06	1135	4.3E-08	1.9E-06	1138	3.1E-08	1.4E-06
7	1614	1.8E-08	1.2E-06	1636	3.6E-07	7.1E-06	1709	1.2E-07	4.1E-06
7	2313	1.8E-08	1.3E-06	2316	4.1E-08	2.1E-06	2320	4.0E-08	1.6E-06
8	1647	1.5E-08	1.1E-06	1656	2.5E-07	4.3E-06	1707	6.1E-08	2.6E-06
8	1748	1.4E-08	1.1E-06	1753	3.8E-07	5.7E-06	1757	1.0E-07	2.9E-06
9	0020	9.3E-09	9.4E-07	0025	3.8E-08	1.9E-06	0027	2.5E-08	1.3E-06
9	0431	5.9E-09	8.1E-07	0435	3.3E-08	1.2E-06	0439	1.0E-08	1.0E-06
9	1102	8.3E-09	9.4E-07	1105	5.3E-08	2.2E-06	1147	2.3E-08	1.5E-06
9	1906	7.8E-09	8.8E-07	1909	4.8E-08	1.5E-06	1915	1.7E-08	1.1E-06
9	1935	8.7E-09	8.7E-07	1939	6.7E-08	1.7E-06	1945	2.4E-08	1.2E-06
9	2121	9.5E-09	9.3E-07	2126	5.9E-08	1.9E-06	2128	2.5E-08	1.2E-06
10	1355	2.3E-08	1.3E-06	1404	4.3E-06	2.2E-05	1408	8.0E-07	9.7E-06
10	1514	1.3E-08	1.2E-06	1517	1.0E-07	2.1E-06	1523	3.0E-08	1.6E-06
10	1730	4.0E-08	1.6E-06	1748	2.8E-07	4.5E-06	1756	9.8E-08	2.9E-06
10	2158	1.0E-08	9.7E-07	2204	8.1E-08	2.0E-06	2208	3.1E-08	1.4E-06
11	0139	2.6E-08	1.4E-06	0142	3.3E-08	2.1E-06	0146	2.7E-08	1.7E-06
11	0331	2.5E-08	1.4E-06	0334	3.3E-08	2.0E-06	0338	2.2E-08	1.6E-06
11	0355	2.4E-08	1.4E-06	0358	1.7E-07	2.9E-06	0402	4.5E-08	2.1E-06
11	0607	1.1E-08	1.0E-06	0610	6.0E-08	2.1E-06	0612	3.1E-08	1.4E-06
11	0626	1.4E-08	1.1E-06	0629	5.8E-08	1.9E-06	0637	2.5E-08	1.4E-06
11	0856	6.7E-09	9.4E-07	0900	1.5E-07	2.7E-06	0902	4.9E-08	1.7E-06
11	1026	8.9E-09	9.5E-07	1030	3.0E-07	3.8E-06	1032	4.1E-08	2.0E-06
11	1215	6.1E-09	9.0E-07	1225	4.4E-08	1.9E-06	1227	3.3E-08	1.4E-06
11	1412	7.9E-09	9.1E-07	1416	2.2E-07	3.5E-06	1418	4.7E-08	1.9E-06
11	1554	4.7E-09	7.6E-07	1557	3.0E-08	1.0E-06	1559	1.0E-08	9.1E-07
11	1736	9.8E-09	8.6E-07	1743	3.0E-08	1.3E-06	1747	1.3E-08	1.0E-06
12	1334	3.6E-09	6.5E-07	1340	1.2E-07	2.4E-06	1345	6.0E-08	1.5E-06

SOLAR X-RAYS BY SATELLITE

GOES

NOVEMBER 1978

DAY	BEGIN TIME	.5-4A Wm^{-2}	1-8A Wm^{-2}	MAX TIME	.5-4A Wm^{-2}	1-8A Wm^{-2}	1/2P TIME	.5-4A Wm^{-2}	1-8A Wm^{-2}
12	1429	5.7E-09	6.5E-07	1436	6.2E-08	1.4E-06	1446	1.5E-08	1.0E-06
12	1750	7.2E-09	6.4E-07	1759	2.2E-08	1.0E-06	1810	9.3E-09	8.3E-07
13	0408	1.6E-09	5.4E-07	0418	1.5E-07	2.1E-06	0423	3.7E-08	1.2E-06
13	0735	4.7E-09	5.9E-07	0739	5.7E-08	1.2E-06	0742	1.7E-08	8.6E-07
13	0819	7.4E-09	6.5E-07	0825	6.3E-07	4.6E-06	0831	1.0E-07	2.4E-06
13	0916	4.7E-09	5.8E-07	0928	1.3E-07	2.3E-06	0931	4.8E-08	1.3E-06
13	0956	1.0E-08	7.7E-07	1002	2.0E-07	2.1E-06	1007	4.9E-08	1.4E-06
13	1103	7.8E-09	6.9E-07	1106	3.6E-08	1.0E-06	1113	1.2E-08	8.2E-07
13	1259	1.6E-10	5.0E-07	1303	1.0E-07	1.8E-06	1305	1.3E-08	8.6E-07
14	1102	1.7E-09	4.5E-07	1106	4.6E-08	1.1E-06	1109	1.1E-08	7.1E-07
14	1308	3.7E-09	6.7E-07	1315	3.3E-08	1.1E-06	1317	1.1E-08	8.7E-07
15	1038	1.6E-08	7.5E-07	1115	4.5E-07	6.1E-06	1142	1.3E-07	3.4E-06
15	1914	3.6E-08	1.2E-06	1934	3.1E-07	4.2E-06	2003	1.1E-07	2.7E-06
15	2320	2.4E-08	1.1E-06	2327	7.6E-08	1.9E-06	2339	3.7E-08	1.5E-06
16	0810	1.9E-08	7.3E-07	0823	2.1E-07	3.3E-06	0838	4.1E-08	2.0E-06
16	1807	4.2E-08	1.3E-06	1814	1.3E-07	2.8E-06	1818	3.7E-08	1.9E-06
18	0502	1.5E-08	6.1E-07	0511	7.2E-08	2.0E-06	0518	4.1E-08	1.3E-06
19	2244	5.7E-09	4.6E-07	2252	4.1E-08	1.2E-06	2257	1.1E-08	7.7E-07
20	0628	1.2E-08	6.6E-07	0645	6.1E-08	2.0E-06	0657	2.8E-08	1.3E-06
20	1948	3.4E-08	1.3E-06	1951	5.3E-08	1.8E-06	1953	5.8E-08	1.5E-06
21	0620	1.7E-08	7.9E-07	0624	4.5E-08	1.2E-06	0631	1.8E-08	9.9E-07
21	0842	9.2E-09	6.2E-07	0849	7.2E-08	1.4E-06	0857	2.3E-08	1.0E-06
21	1408	2.6E-09	4.6E-07	1412	5.2E-08	1.1E-06	1421	1.6E-08	7.7E-07
21	1803	1.3E-08	7.4E-07	1807	9.8E-08	2.2E-06	1814	3.8E-08	1.4E-06
22	0657	8.6E-09	5.4E-07	0706	7.0E-08	1.6E-06	0711	3.9E-08	1.1E-06
22	0852	3.6E-09	4.6E-07	0855	6.5E-08	1.1E-06	0858	9.5E-09	6.7E-07
23	1653	2.9E-09	3.8E-07	1656	4.8E-08	1.1E-06	1700	4.7E-09	4.4E-07
24	0643	5.3E-09	5.1E-07	0658	4.3E-08	1.4E-06	0723	1.5E-08	9.9E-07
24	1055	5.1E-09	5.8E-07	1101	3.8E-08	1.0E-06	1106	1.2E-08	8.2E-07
24	2218	1.8E-08	6.7E-07	2235	3.3E-07	3.7E-06	2320	8.2E-08	2.1E-06
25	0425	3.1E-09	4.7E-07	0433	3.2E-08	1.1E-06	0448	8.9E-09	8.1E-07
25	1412	5.5E-08	1.1E-06	1424	2.2E-07	3.2E-06	1453	6.4E-08	2.1E-06
25	1725	1.2E-08	7.5E-07	1729	3.5E-08	1.1E-06	1731	1.7E-08	9.3E-07
25	1819	1.2E-08	6.3E-07	1827	9.1E-08	2.0E-06	1838	3.8E-08	1.3E-06
26	2105	1.6E-08	6.8E-07	2110	4.9E-08	1.1E-06	2118	1.6E-08	8.7E-07
26	2208	6.2E-09	5.6E-07	2214	1.2E-07	1.8E-06	2225	3.4E-08	1.2E-06
27	0332	2.1E-08	1.0E-06	0335	6.0E-08	2.4E-06	0340	4.0E-08	1.6E-06
27	0520	1.4E-08	8.3E-07	0529	6.6E-08	1.9E-06	0534	4.4E-08	1.3E-06
27	0805	4.4E-08	1.2E-06	0821	1.4E-07	3.0E-06	0830	5.0E-08	2.0E-06
27	0941	1.1E-08	8.3E-07	0944	7.6E-08	2.2E-06	0952	3.9E-08	1.3E-06
28	0247	2.4E-08	1.0E-06	0259	6.5E-07	6.3E-06	0309	1.1E-07	3.4E-06
28	0515	3.2E-08	1.3E-06	0551	2.3E-06	1.6E-05	0620	5.5E-07	8.9E-06
28	0807	1.0E-07	3.1E-06	0813	6.6E-07	7.4E-06	0815	1.7E-07	4.7E-06
28	1023	1.9E-08	1.2E-06	1028	8.4E-06	3.0E-05	1030	1.3E-06	1.2E-05
28	1155	2.0E-08	1.4E-06	1158	2.4E-08	2.4E-06	1205	2.4E-08	1.5E-06
29	0006	2.9E-08	1.2E-06	0009	5.2E-08	1.8E-06	0014	4.1E-08	1.4E-06
29	0116	4.0E-08	1.5E-06	0119	1.1E-07	2.3E-06	0122	2.5E-08	1.7E-06
29	0207	3.9E-08	1.5E-06	0210	9.5E-08	2.1E-06	0214	3.5E-08	1.8E-06
29	0314	3.6E-08	1.3E-06	0317	4.5E-08	2.0E-06	0319	4.0E-08	1.4E-06
29	1429	1.0E-08	9.7E-07	1434	1.9E-07	2.5E-06	1437	3.6E-08	1.4E-06
29	1520	4.6E-09	7.7E-07	1523	2.8E-07	3.1E-06	1527	7.0E-08	1.9E-06
29	1936	2.4E-08	1.0E-06	1946	4.1E-07	5.0E-06	1950	4.0E-08	2.2E-06
29	2019	9.1E-09	8.1E-07	2024	4.7E-08	2.0E-06	2027	3.7E-08	1.3E-06
29	2137	2.0E-08	1.1E-06	2140	5.8E-08	1.8E-06	2144	4.9E-08	1.4E-06
29	2337	1.3E-08	1.0E-06	2340	6.9E-08	2.4E-06	2343	4.2E-08	1.6E-06
30	0114	2.2E-08	1.1E-06	0119	8.7E-08	2.0E-06	0122	6.0E-08	1.5E-06
30	0149	3.9E-08	1.5E-06	0203	1.2E-06	1.2E-05	0218	3.4E-07	6.9E-06
30	0429	1.1E-08	9.4E-07	0434	5.9E-08	1.5E-06	0438	2.0E-08	1.2E-06
30	0634	6.2E-09	9.1E-07	0638	1.9E-07	2.7E-06	0642	4.5E-08	1.7E-06
30	0757	4.4E-08	1.3E-06	0800	5.2E-08	2.0E-06	0802	4.5E-08	1.5E-06
30	1032	2.0E-08	1.3E-06	1036	1.2E-07	2.4E-06	1039	3.7E-08	1.8E-06
30	1500	1.5E-08	1.2E-06	1507	5.7E-08	1.8E-06	1511	2.3E-08	1.4E-06
30	2203	9.6E-09	9.5E-07	2206	9.2E-09	2.9E-06	2209	1.0E-08	1.0E-06
30	2329	1.1E-08	1.0E-06	2332	2.7E-08	1.6E-06	2336	2.0E-08	1.2E-06

PIONEER IX

NOVEMBER 1978

Date Nov. 1978	DSN Coverage (UT)	Data Time (UT)	ESP (°)	SOLAR WIND[1]				IP E-FIELD[2]	IMF[3]		COSMIC RAY PROTONS[4] (particles/sec)	
				U_{H^+} (km/sec)	N_{H^+} (H^+/cc)	T_{H^+} (x10^6°K)	TAU (days)	400 Hz (mv)	|B| (γ)	φ (°)	>13.9 Mev	>40 Mev
12	1509-1700	1500	-083.6	468.**			-5.83	0.273	12.8	286.	8.77	0.786
		1600		504.				.246	11.5	283.	8.89	.714
		1700		468.				.358	12.2	299.	8.64	.654

[1] Wolfe - NASA/ARC
[2] Scarf - TRW, Inc.
[3] Sonett and Colburn - NASA/ARC
[4] Webber - Univ. of N. H.

ESP = Earth-Sun Probe Angle.

Data sampled hourly unless otherwise noted.

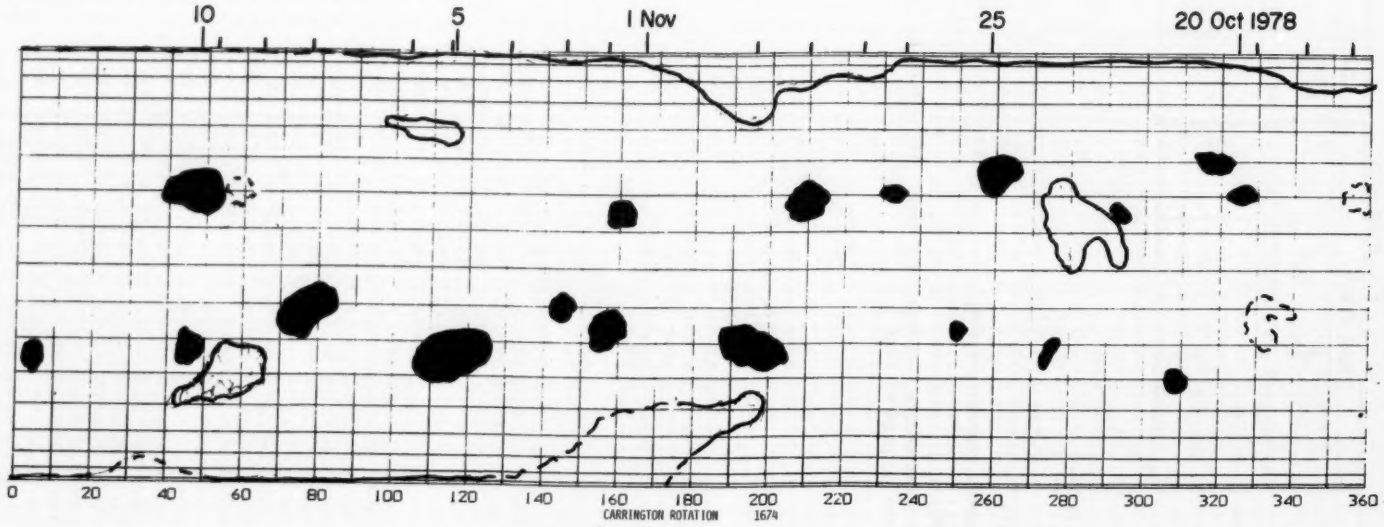
* 1700-2000 data not usable.

** Peak velocity-Wolfe's least squares analysis not done. The extremely low N_{H+} during this coverage caused the Least Squares program to fail.

HELIUM 10830Å SYNOPTIC MAPS

CARRINGTON ROTATION 1674

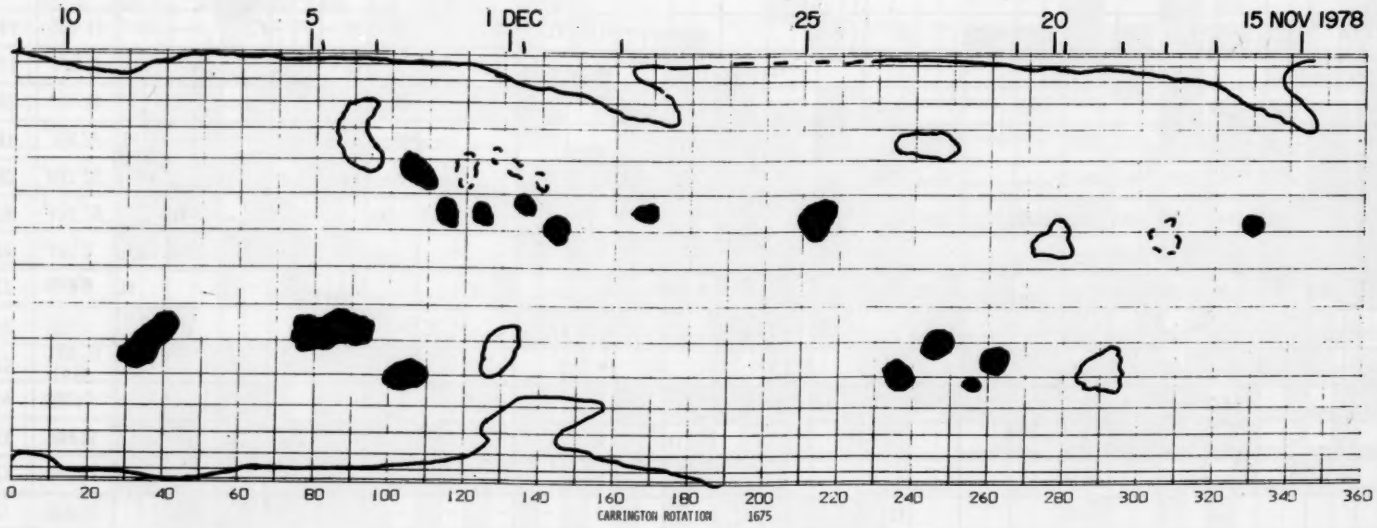
KITT PEAK NATIONAL OBSERVATORY



HELIUM 10830Å SYNOPTIC MAPS

CARRINGTON ROTATION 1675

KITT PEAK NATIONAL OBSERVATORY



INFERRED IP MAGNETIC FIELD

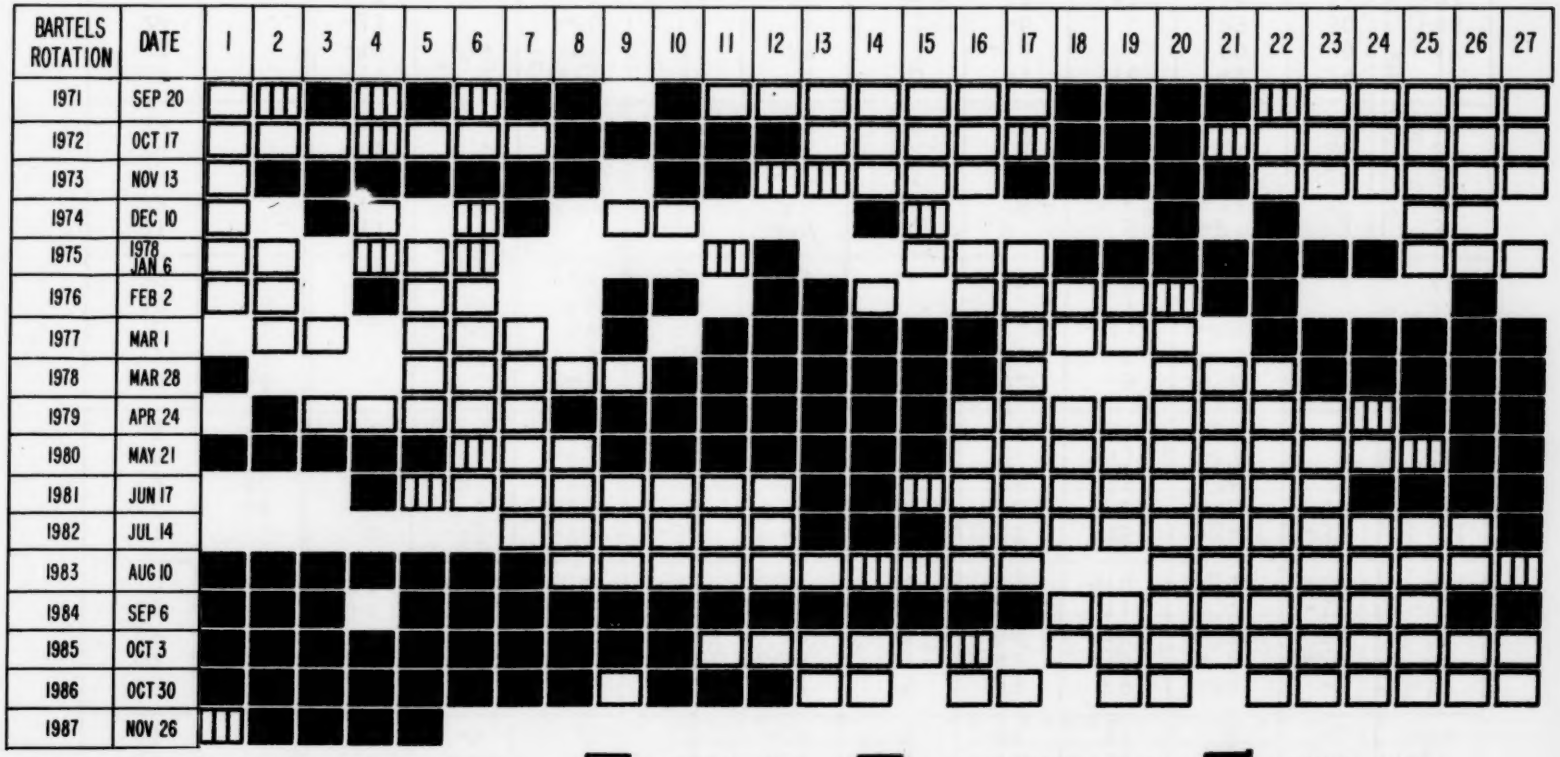
BARTELS ROTATION	DATE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
1970	AUG 29				-	-	-	TA										AT	AT			AT	TA	TA	-	AT	AT	
1971	SEP 25						-	-	-	-	-	-					TA				TA							
1972	OCT 22					-	AT														AT	AT					*	
1973	NOV 18			TA	AT						-		AT							*					*			
1974	DEC 15				-	-	-		AT	-		AT						AT		TA		TA		TA			*	
1975	1978 JAN 11		*	*						*		*	*					*			TA		-	AT			-	-
1976	FEB 7						*	TA				-			-						-			*		TA	A*	TA
1977	MAR 6	TA							AT			T*	*					TA			AT	AT		AT		AT		*	TA				
1978	APR 2							*	-		AT											AT	AT						
1979	APR 29		TA		*		TA	AT	AT	TA		-		T*						TA	TA			AT					
1980	MAY 26				TA			AT	AT			-				AT	TA				-						-		-
1981	JUN 22	TA					A*					-	TA		TA	TA		AT		*					*	AT		AT	-		AT		
1982	JUL 19									TA								-	-		TA					AT		AT	*		TA		
1983	AUG 15					TA			AT		AT	AT		AT	TA						A*							TA		
1984	SEP 11			TA		AT				TA	T*						A*		-					-		A*	TA	-		
1985	OCT 8	*	TA		T*		AT				-	-	-						TA	TA	-		AT				-			
1986	NOV 4		-				-	AT	-		-		-					*	AT		-		AT	AT		AT		AT				

■ = definitely towards the sun □ = definitely away from the sun

T = towards the sun A = away from the sun * = effect doubtful or not discernible - = missing data

The table shows daily inferences of the polarity of the interplanetary magnetic field. The first half of the day is based principally on magnetograms produced by the magnetometer at the Vostok Antarctic Station of the USSR. The magnetometer of the U.S. Air Weather Service now operated at Thule by the Danish Meteorological Institute is used for the second half of the day.

STANFORD MEAN SOLAR MAGNETIC FIELD



POLARITY OF THE MEAN SOLAR MAGNETIC FIELD: □ = FIELD >2μT, ▥ = -2μT ≤FIELD ≤2μT, ■ = FIELD <-2μT

No box visible indicates no data available for that day.

Note: Data are taken daily at 2000 UT. Dates given are not Bartels Rotation dates. These earlier dates correspond to the occurrence of phenomena on the sun which affect the Earth during the given Bartels Rotation.

STANFORD MEAN SOLAR MAGNETIC FIELD (MICROTESLA)

1977 1978

DAY	DEC.	JAN.	FEB.	MARCH	APRIL	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.
01	-14	.	16	.	52	-12	-28	1	40	26	-11	-18
02	-10	.	31	22	46	-34	-22	13	39	32	-20	-21
03	-7	14	26	12	43	-27	-12	15	42	15	-14	-36
04	8	31	.	.	13	-27	-5	18	39	18	-8	-28
05	26	.	-5	8	4	-29	6	24	31	2	-3	-19
06	46	27	4	11	-15	-27	5	43	29	-24	-7	-12
07	55	15	9	4	-32	-23	21	42	30	-12	-20	3
08	53	.	.	.	-53	-12	33	36	17	-7	-29	-6
09	46	-1	.	-31	-52	3	41	16	-11	.	-37	-17
10	26	11	-28	.	-41	24	40	-11	-10	-35	-29	-3
11	.	0	-43	-70	-32	41	23	-17	-15	-34	-32	5
12	-2	.	.	-78	-4	50	12	-12	-22	-42	-14	9
13	10	.	-41	-56	22	47	8	-38	-33	-36	2	.
14	.	.	-23	-49	.	30	0	.	-43	-27	7	16
15	1	.	3	-28	.	16	-24	.	-31	-26	8	20
16	-6	0	.	-3	58	5	-38	.	-9	-36	9	.
17	.	-3	31	18	37	1	.	.	5	-48	5	34
18	6	.	22	54	11	-29	.	.	13	-44	-1	42
19	8	.	37	48	-9	-49	.	.	7	-50	.	.
20	.	18	22	24	-30	-75	-16	23	7	-33	4	55
21	.	39	-1	.	-49	-79	0	21	5	-21	3	35
22	.	10	-18	-23	-50	-59	24	16	4	-14	19	40
23	-5	-4	-49	-49	-62	-37	51	6	-1	5	20	28
24	-1	-15	.	-69	.	-21	52	3	1	31	25	27
25	.	-17	.	-79	-13	-9	48	3	5	43	23	18
26	.	-36	.	-73	10	1	30	-7	18	42	24	2
27	.	-48	-34	-53	13	27	12	-13	.	40	29	-17
28	.	-33	.	-28	6	14	3	-6	.	29	30	-48
29	-9	-15		.	13	-10	-5	14	41	15	17	-61
30	.	14		.	18	-20	-10	27	41	2	-3	-65
31	-20	10		.		-27		33	35		-16	

Dot symbol entry indicates no data available for the day.

SOLAR WIND

Interplanetary Scintillations

NOVEMBER 1978

DAY	3C48 VEL	3C48 ERR	3C144 VEL	3C144 ERR	3C147 VEL	3C147 ERR	3C161 VEL	3C161 ERR	3C237 VEL	3C237 ERR	3C273 VEL	3C273 ERR	3C298 VEL	3C298 ERR	3C459 VEL	3C459 ERR
1			335	15					253	15	273	10	421	18	340	42
2									265	17	265	4	415	25	361	32
3							251	22	298	4	299	16	423	6	344	20
4									292	4	279	4	411	17		
5							309	34	331	51	311	6	527	60		
6									341	50	291	4	232	26		
7							295	8	313	11	318	9			383	40
8							352	22			283	7	388	67	508	48
9			358	16	304	89	375	35	289	7	340	5	406	34	559	96
10									233	4	295	11	468	63		
11									502	38	361	15	422	29		
13											343	5	309	5		
14											304	4	271	3		
15							327	7			306	4	298	5	442	61
16							338	28	298	4	302	4	274	3		
17							268	6	345	8	262	3	269	3		
19							323	14	308	27	276	4	282	2	411	11
20	612	7	389	5			323	3	292	3	326	3	329	8	597	4
21							372	20	361	50	385	4	320	4	461	84
22			466	6			362	10	344	8	426	6	393	4		
23			372	19			422	41	282	15	383	4	363	4		
24									285	66	393	9	308	3	664	31
25									372	5	392	7	354	4		
26							371	23	411	21	442	13	314	5	669	68
27							319	32	466	66	432	4	346	3	458	87
28											437	28	332	6		
29											407	27	337	4		
30									286	10	312	12	295	3	435	14

NOVEMBER 5	UT	LAT	DIST	DLON
3C48	7.	8.	1.28	-1.
3C144	11.	2.	1.24	9.
3C147	10.	9.	1.22	9.
3C161	12.	-4.	1.18	10.
3C237	16.	0.	0.95	17.
3C273	18.	3.	0.61	52.
3C298	20.	46.	0.40	59.
3C459	4.	6.	1.21	-11.

15	UT	LAT	DIST	DLON
	6.	8.	1.27	-3.
	10.	1.	1.27	7.
	9.	7.	1.24	8.
	12.	-5.	1.21	8.
	15.	0.	1.01	17.
	17.	1.	0.74	42.
	19.	30.	0.50	56.
	4.	6.	1.17	-13.

25	UT	LAT	DIST	DLON
	6.	7.	1.26	-6.
	10.	0.	1.29	5.
	9.	6.	1.26	6.
	11.	-6.	1.24	6.
	15.	-1.	1.06	16.
	17.	0.	0.85	32.
	18.	20.	0.62	49.
	3.	5.	1.13	-14.

Dot symbol entry indicates no data available for the day.

BOULDER GEOMAGNETIC SUBSTORM LOG

NOVEMBER 1978

DATE	TIME OF ONSET	DIR.	COMMENTS
1	0300		Beginning of disturbed period lasting through 1430 UT
	0835	West	
	0855	West	
	0930	West	
2	0440	East	Weak SS
	0800	West	Weak SS
	0855	West	Several injections followed
	1100	West	Several injections followed
	1250	West	
	1525	West	Several injections followed
3	0720	West	
	0805	West	
4	0530	East	Weak SS
	0800	West	Weak SS
	1230	West	Weak SS
	1345	West	Weak SS
5	0235	East	Weak SS
	0310	East	Weak SS
	1130	West	Weak SS
6			Quiet day
7	2055		Sharp negative H-component "spike" all mid and low latitude stations.
	2225	East	
8	0155		Sharp positive H-component "spike" all mid and low latitude stations.
9	0555	East	Weak SS
	0730	≈center	Weak SS
	0850		Weak SS
	1205	West	Weak SS
10	1530		Gradual SS onset; Norman Wells to College to Arctic Village
	1640		Strong SS at Inuvik and Arctic Village, previous SS continues
11	0550		Localized SS; Gillam to Island Lake to Ft. Smith
12	0101		SSC - mag storm follows
13			Field remains disturbed with mag storm conditions from 1200 to 2000 UT. The field quickly recovers after 2000 UT.
14	1250	West	Weak SS, slow onset
	1345	West	Strong SS
	1550		Moderate SS
	1835		Weak SS, slow onset
15	0340	East	Weak SS
	0615	East	Weak SS
	1030	East	Weak SS
16	1235	West	
	1330	West	
17	0750	West	
	0830	West	
	1155	West	
18	0655	West	1st of double onset, weak SS
	0720	West	2nd of double onset, weak SS
	2330		Positive impulse H-component
19	0325	East	
	0840	West	1st of double onset, Weak SS
	0905	West	2nd of double onset
	1030	West	
	1130	West	Strong SS at College - Talkeetna
	1215	West	
	1300	West	
20			Disturbed field 0400-2400 UT. Numerous small SS besides those listed.
	0415	East	
	0520	East	
	0805	West	1st of multiple onset
	0830	West	2nd of multiple onset
	0905	West	3rd of multiple onset
21	0500	East	1st of double onset
	0530	East	2nd of double onset
	0825	West	1st of multiple onset
	0900	West	2nd of multiple onset
	0925	West	3rd of multiple onset
22	0400		Gradual onset of mag storm lasting until 1830 UT. Numerous SS with strongest occurring at 1230 UT.
23	0950	West	1st of double onset
	1010	West	2nd of double onset
	1130	West	1st of double onset
	1245	West	2nd of double onset, strong SS Alaska
	1345	West	
	1525		1st of double onset
	1610		2nd of double onset
24			Field disturbed 0900-2200 UT with numerous small SS besides those listed.
	0945	West	
	1030	West	
	1350		1st of multiple onset
	1440		2nd of multiple onset
	1505		3rd of multiple onset
	1630		
25			Field disturbed 0200-1900 UT with intense activity 1000-1900 UT.
	1010		1st of double onset, intense SS
	1040		2nd of double onset, intense SS
	1245		Intense SS
	1540		Intense SS
26	0140	East	
	0525	centered	Strong SS, 180 gamma max. deflection Boulder D component
	0845	West	
	1335		1st of double onset
	1430		2nd of double onset, strong SS
27			Generally unsettled field
	0450	East	
	0530	East	
	0610	≈center	
	0810	West	1st of multiple onset
	0830	West	2nd of multiple onset
	0845	West	3rd of multiple onset
	1235		
	1405		
28			Minor perturbations, no distinctive SS
29	1015	West	
	1115	West	
	1625		
30	0225	East	Weak SS
	0950	West	Weak SS
	1215	West	Weak SS

OCTOBER 1978 DATA

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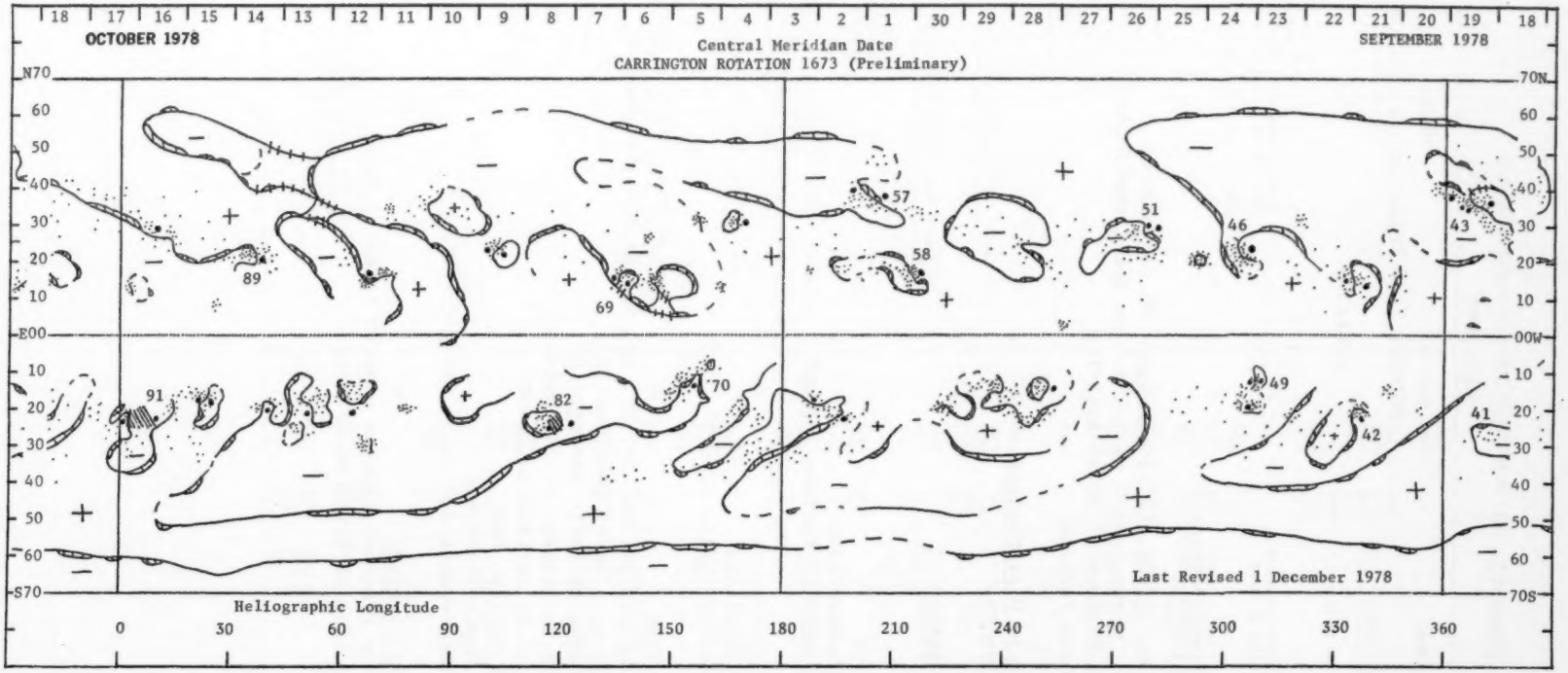
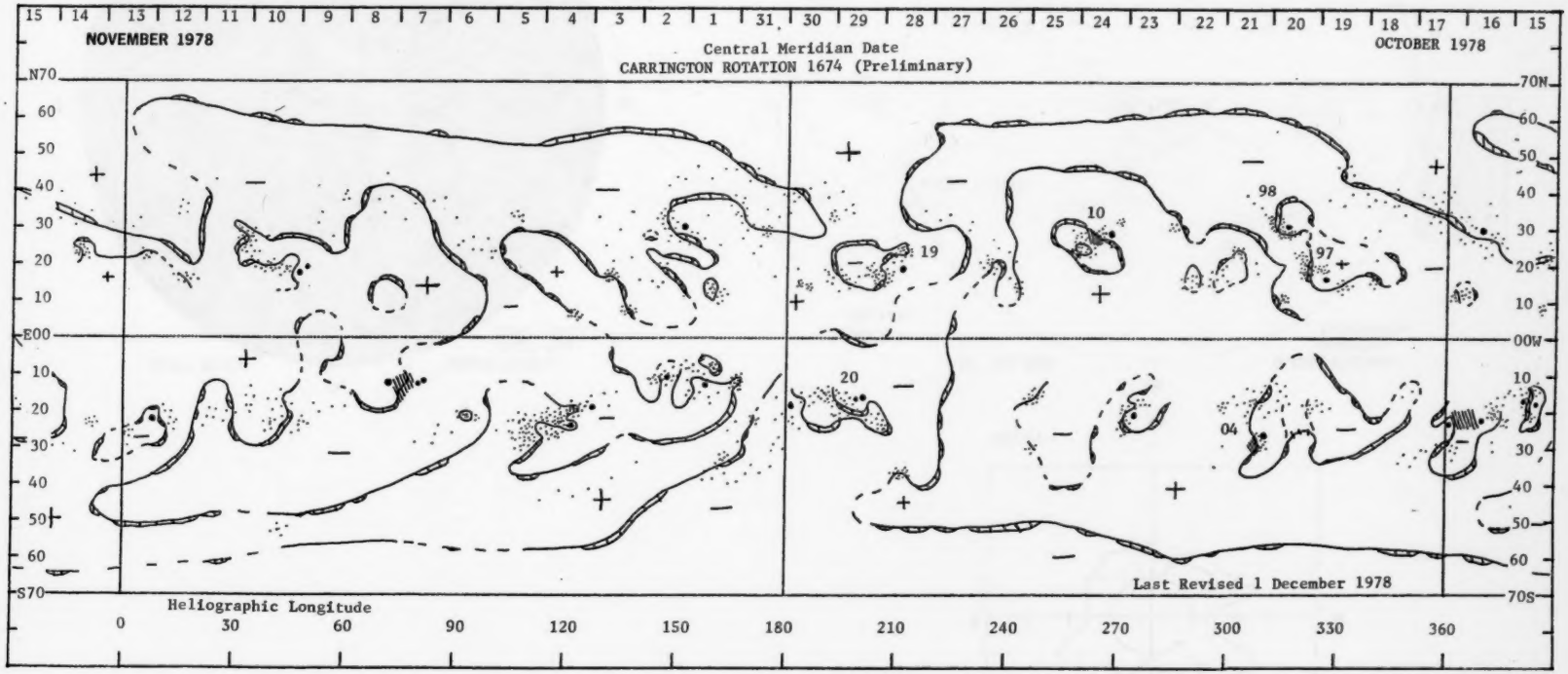
Hα SYNOPTIC CHART

CARRINGTON ROTATION 1673 (PRELIMINARY)



Hα SYNOPTIC CHART

CARRINGTON ROTATION 1674 (PRELIMINARY)



39
Oct 78

OCTOBER 1, 1978 (P = 25.99, B_o = 6.72, L_o = 215.56)

SACRAMENTO PEAK

Np

CORONA (1.15 $R_\odot$)
5303 Å

E

W

1631 UT

Sp

KITT PEAK

Np

MAGNETOGRAM
Bright - Plus
Dark - Minus

E

W

1434 UT

Sp

MT. WILSON

Np

DELTAY =
DELTAX =

MAGNETOGRAM
Solid - Plus
Dotted - Minus

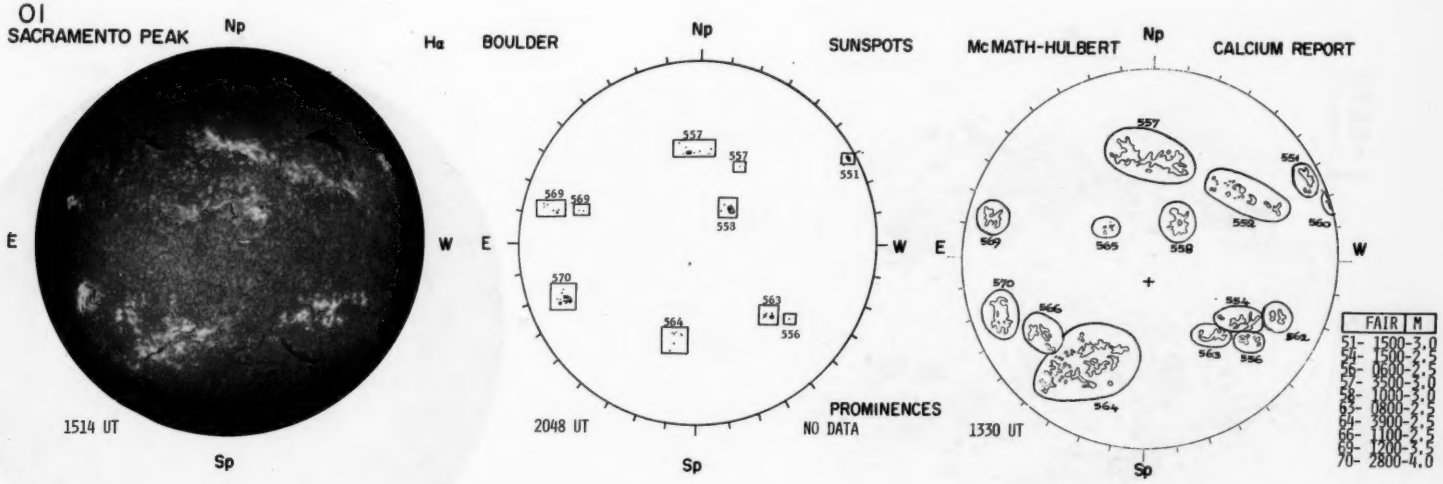
E

NO DATA

W

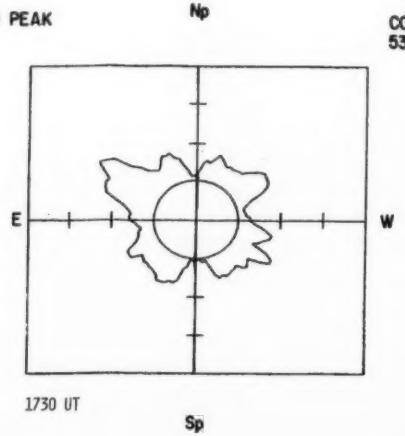
Sp

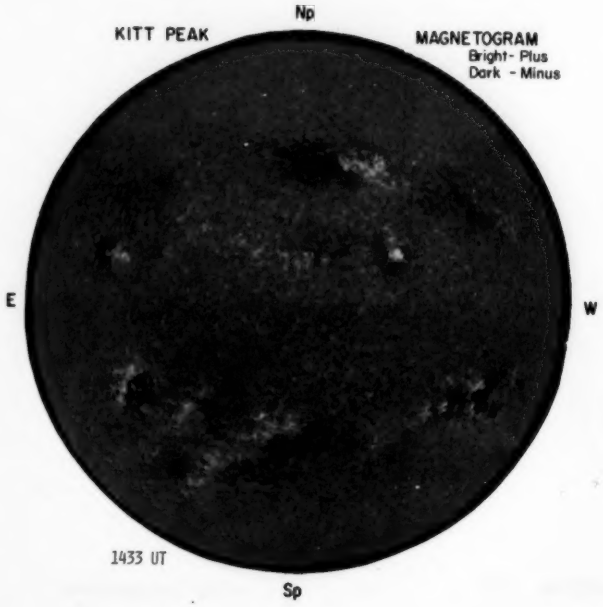
Levels
± 5
± 10
± 20
± 40
± 80

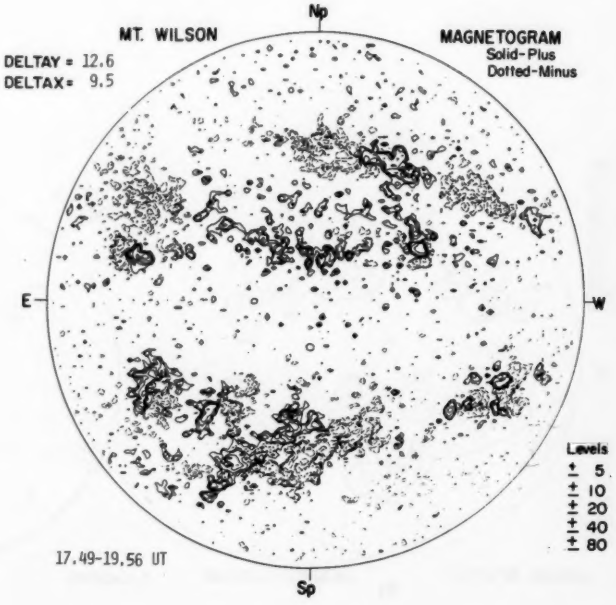

01
SACRAMENTO PEAK
Np
E
W
Sp
1514 UT
Hα
BOULDER
Np
SUNSPOTS
E
W
Sp
2048 UT
PROMINENCES
NO DATA
McMATH-HULBERT
Np
CALCIUM REPORT
E
W
Sp
1330 UT
FAIR M
51- 1500-3.0
54- 1500-2.5
56- 0600-2.5
57- 3500-3.0
58- 1000-3.0
63- 0800-2.5
64- 3900-2.5
66- 1100-2.5
68- 1200-3.0
70- 2800-4.0

OCTOBER 2, 1978 (P = 26.06, B_o = 6.67, L_o = 202.36)

SACRAMENTO PEAK

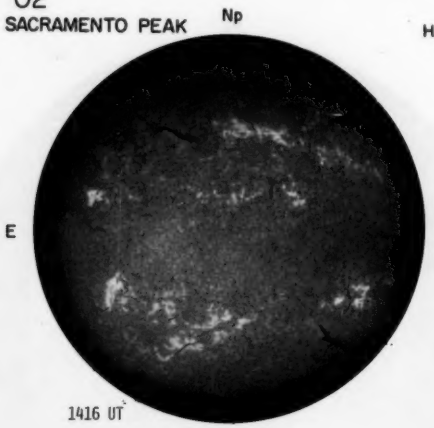




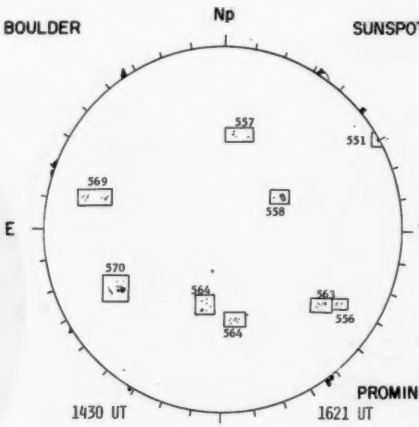


02

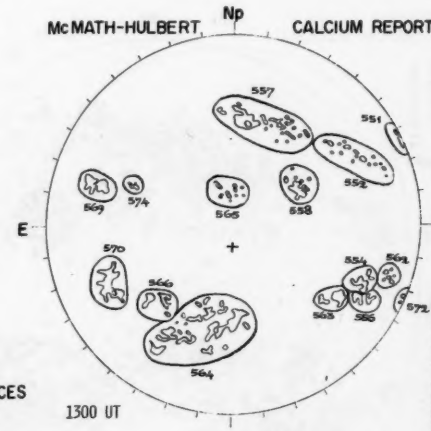
SACRAMENTO PEAK



Hα BOULDER



SUNSPOTS



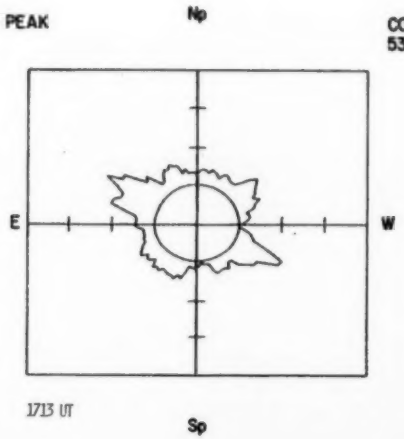
McMATH-HULBERT

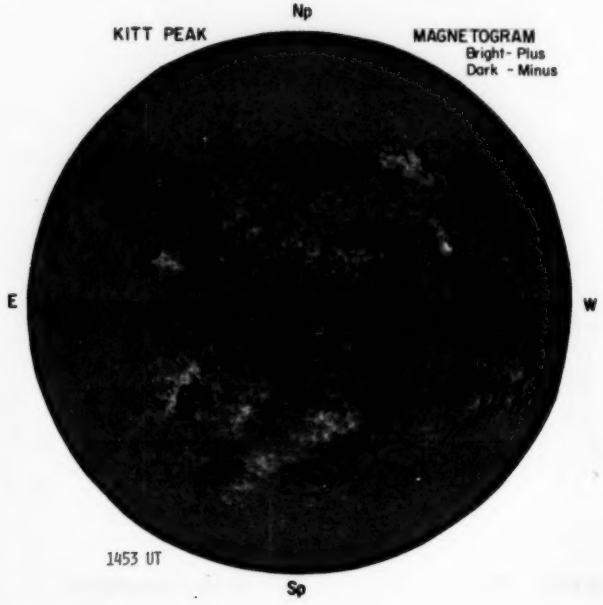
CALCIUM REPORT

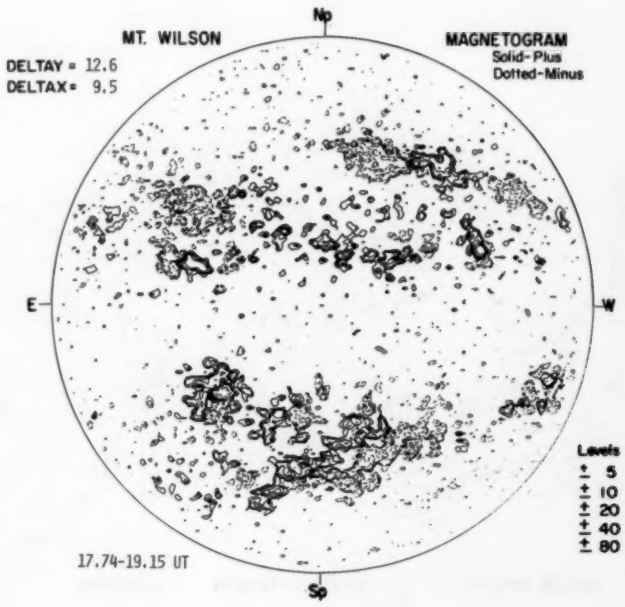
FAIR	D
51- 1000	3.0
54- 1500	3.0
57- 0800	2.0
57- 2200	3.0
58- 1100	3.0
63- 1200	2.0
65- 2200	3.0
66- 1100	2.0
66- 1700	3.0
70- 3000	3.0

OCTOBER 3, 1978 (P = 26.11, B_o = 6.62, L_o = 189.17)

SACRAMENTO PEAK

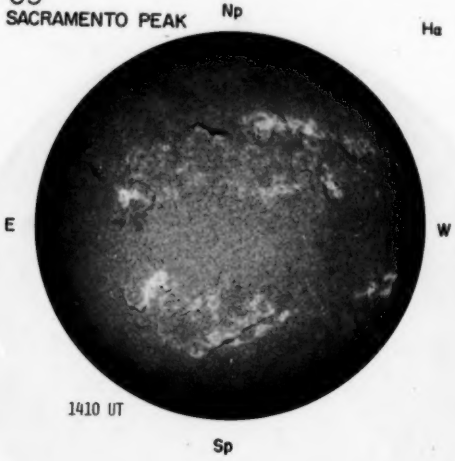




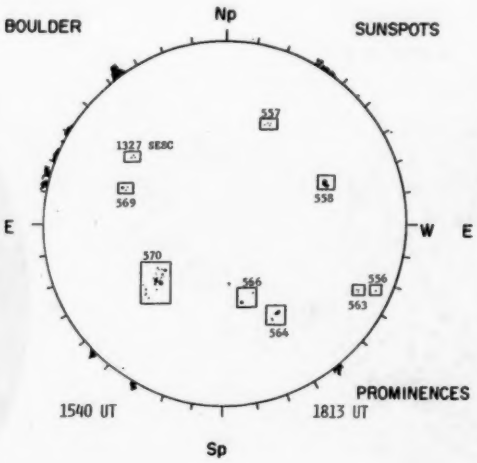


03

SACRAMENTO PEAK



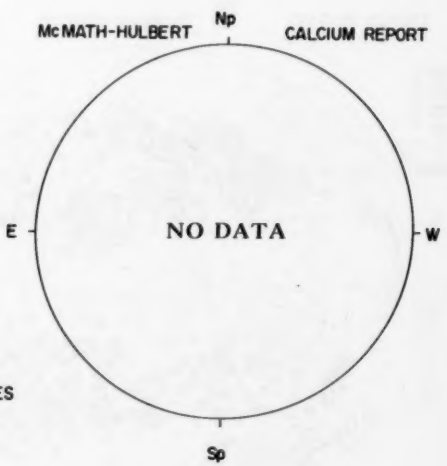
Hα BOULDER



SUNSPOTS

PROMINENCES

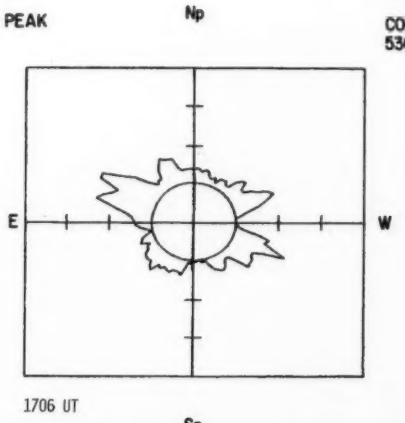
McMATH-HULBERT



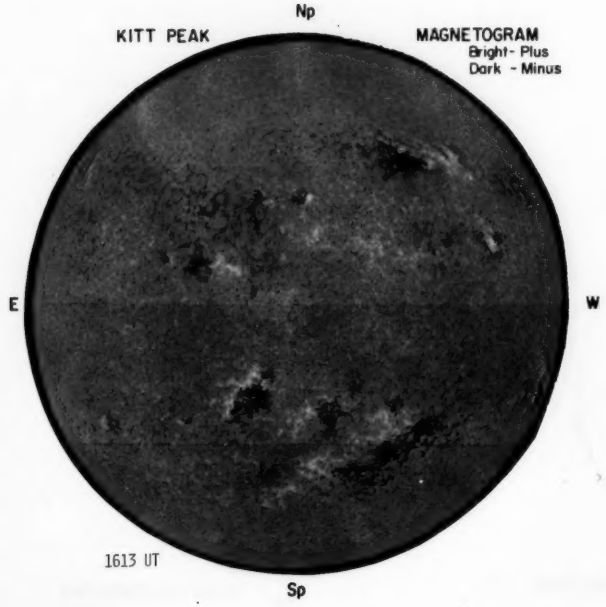
CALCIUM REPORT

OCTOBER 4, 1978 (P = 26.17, B_o = 6.57, L_o = 175.97)

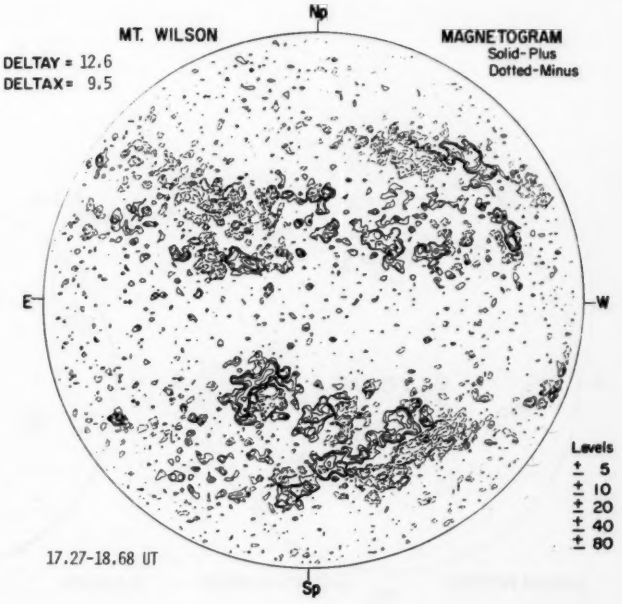
SACRAMENTO PEAK



1706 UT



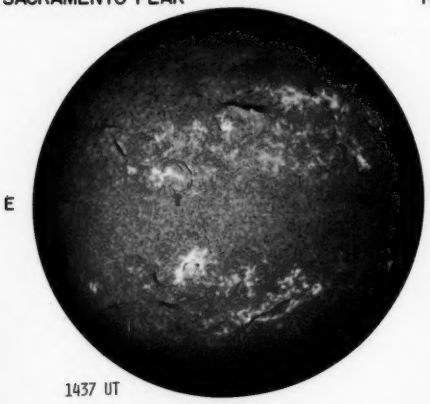
1613 UT



17.27-18.68 UT

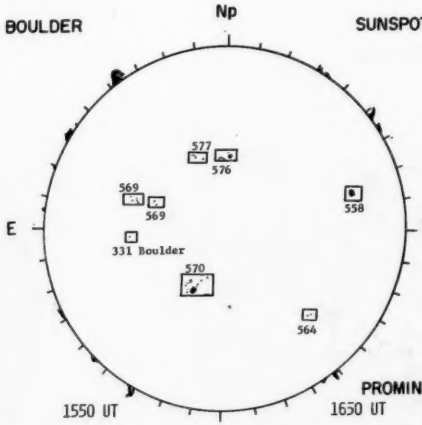
04

SACRAMENTO PEAK



1437 UT

Hα BOULDER



1550 UT

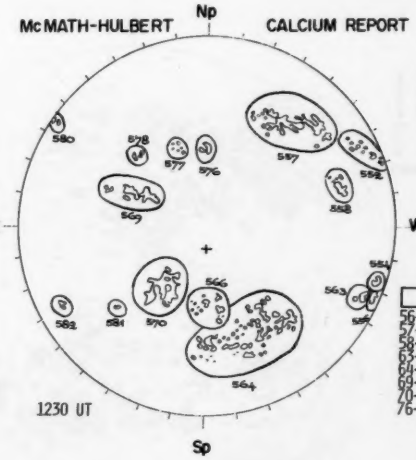
SUNSPOTS

PROMINENCES

1650 UT

McMATH-HULBERT

CALCULUM REPORT

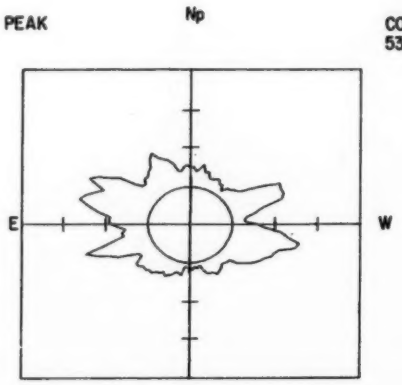


1230 UT

FAIR	M
56- 0900	2.5
57- 3000	3.0
58- 1200	3.0
63- 1000	3.0
69- 0000	2.5
69- 1500	3.0
70- 2800	3.5
76- 0500	3.0

OCTOBER 5, 1978 (P = 26.21, B_o = 6.52, L = 162.78)

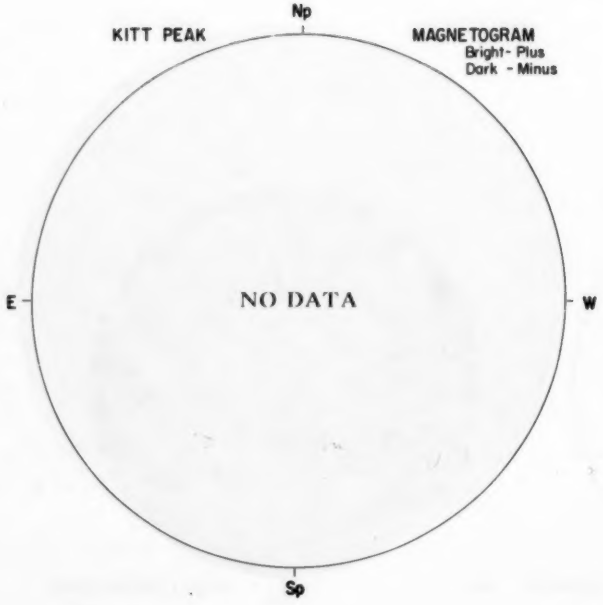
SACRAMENTO PEAK



CORONA (1.15 $R_\odot$)
5303 Å

1636 UT

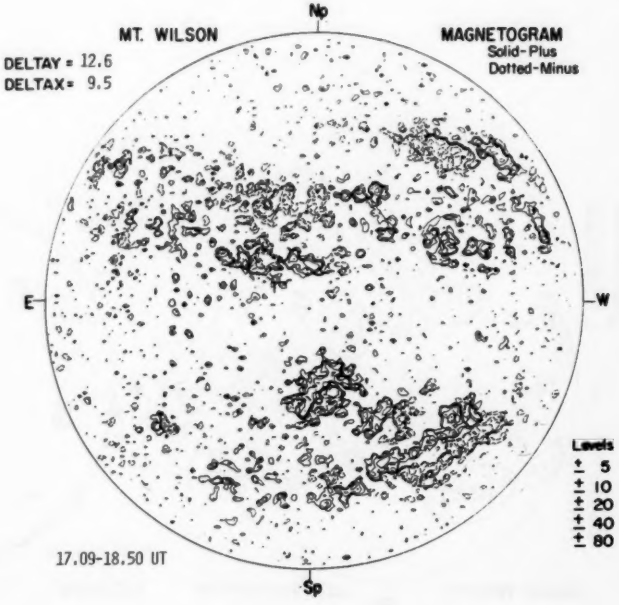
KITT PEAK



MAGNETOGRAM
Bright - Plus
Dark - Minus

MT. WILSON

DELTAY = 12.6
DELTAX = 9.5



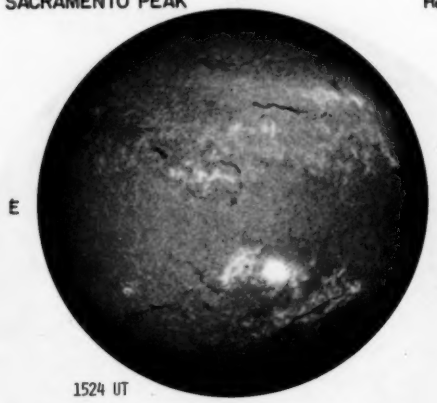
MAGNETOGRAM
Solid - Plus
Dotted - Minus

Levels
± 5
± 10
± 20
± 40
± 80

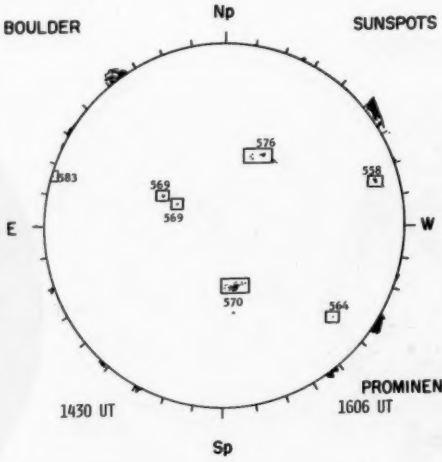
17.09-18.50 UT

05

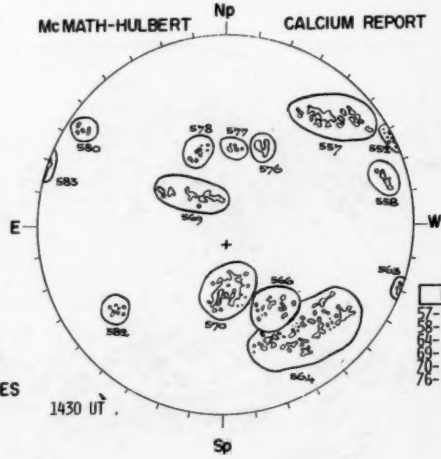
SACRAMENTO PEAK



Ha BOULDER



SUNSPOTS



PROMINENCES

McMATH-HULBERT

CALCIUM REPORT

FAIR	M
57- 3000-3.5	
58- 1200-2.5	
64- 4000-2.0	
69- 1600-2.5	
70- 2800-3.5	
76- 0800-2.5	

OCTOBER 6, 1978 (P = 26.25, B_0 = 6.46, L_0 = 149.59)

SACRAMENTO PEAK

Np

CORONA (1.15 $R_\odot$)
5303 Å

E — NO DATA — W

Sp

KITT PEAK

Np

MAGNETOGRAM
Bright - Plus
Dark - Minus

E W

1416 UT

Sp

MT. WILSON

Np

MAGNETOGRAM
Solid - Plus
Dotted - Minus

DELTAY = 12.6
DELTAX = 9.5

E W

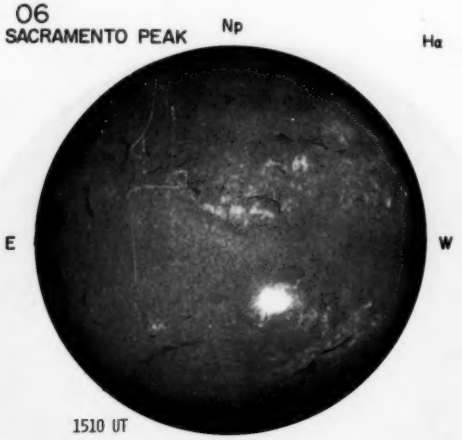
Levels
+ 5
+ + 10
+ + + 20
+ + + + 40
+ + + + + 80

16.41-17.88 UT

Sp

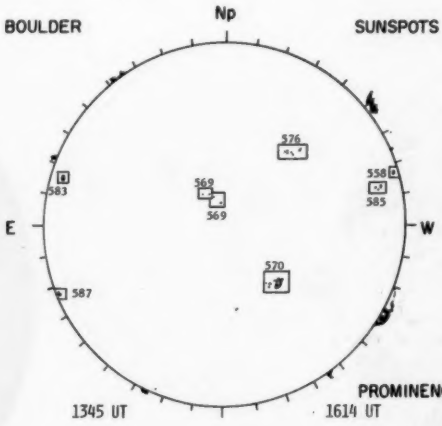
06

SACRAMENTO PEAK



1510 UT

Hα BOULDER



1345 UT

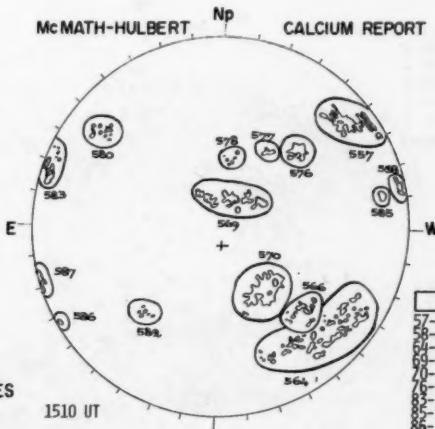
SUNSPOTS

PROMINENCES

1614 UT

McMATH-HULBERT

CALCIUM REPORT

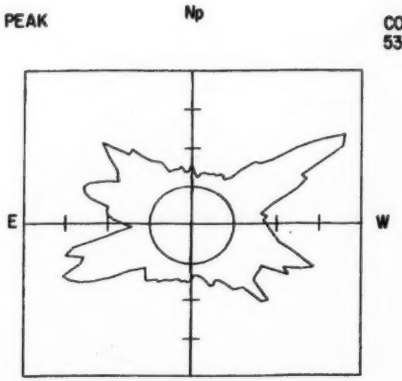


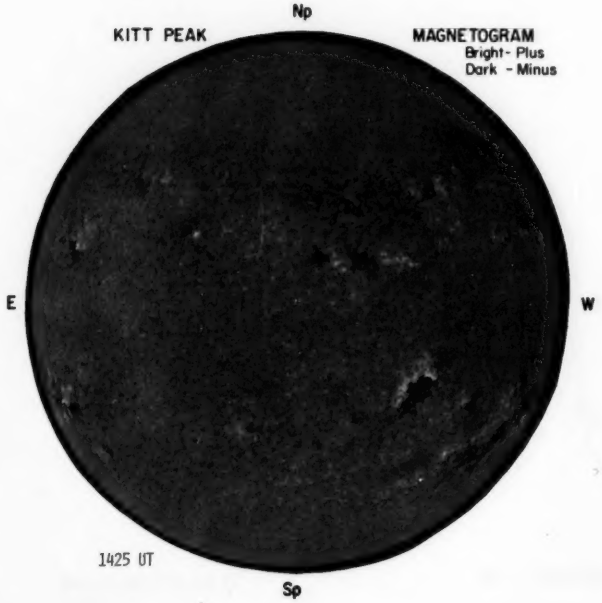
1510 UT

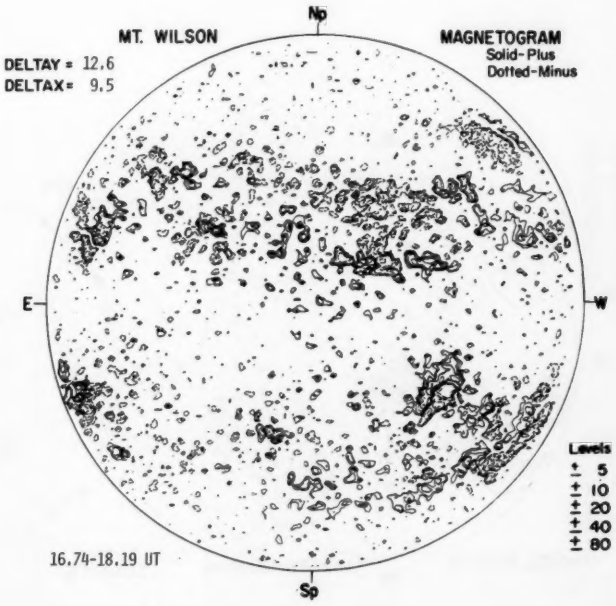
GOOD	M
57- 3000	2.0
58- 0700	2.5
61- 4000	2.0
62- 1600	2.5
70- 3200	3.0
71- 0800	2.5
83- 1500	3.0
84- 0400	2.5
86- 0700	2.5
87- 1800	3.0

OCTOBER 7, 1978 (P = 26.28, B_o = 6.40, L_o = 136.39)

SACRAMENTO PEAK

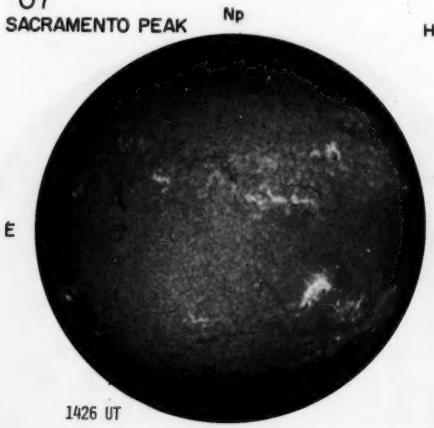






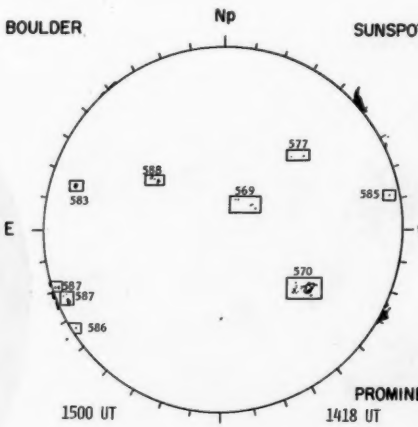
07

SACRAMENTO PEAK



1426 UT

Hα BOULDER



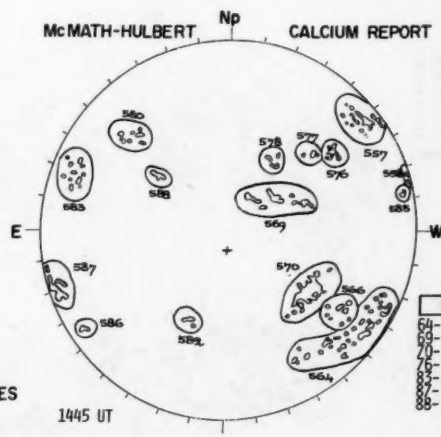
1500 UT

SUNSPOTS

PROMINENCES

1418 UT

McMATH-HULBERT



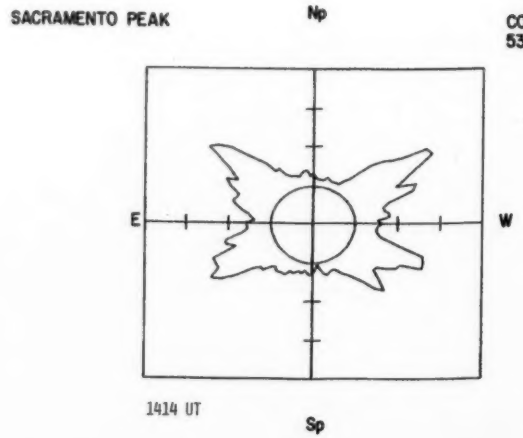
1445 UT

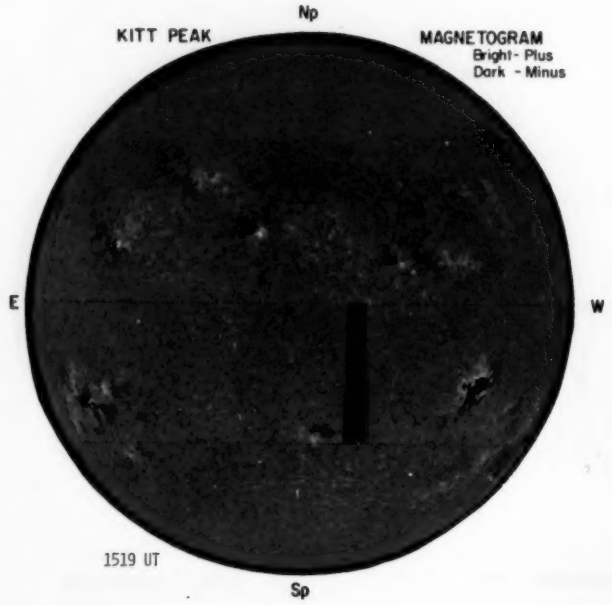
CALCIUM REPORT

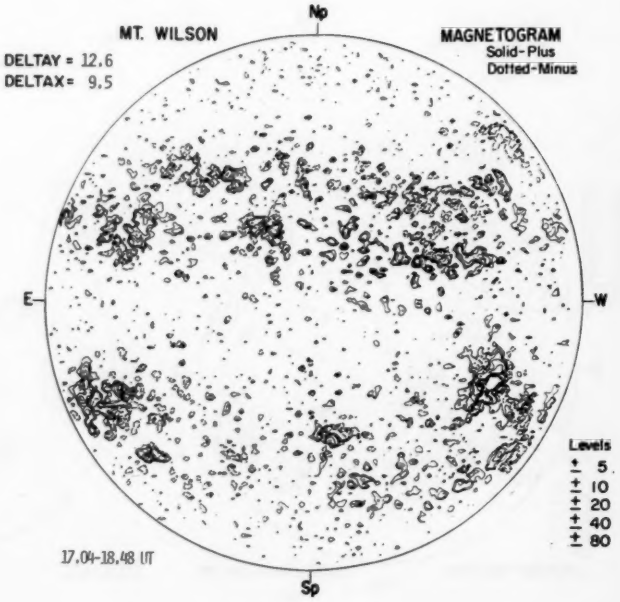
FAIR	D
64- 3500	2.0
69- 1600	2.5
70- 3000	3.0
76- 0600	2.5
83- 1200	2.5
87- 2600	3.0
88- 0500	2.5

OCTOBER 8, 1978 (P = 26.30, B_o = 6.34, L_o = 123.20)

SACRAMENTO PEAK

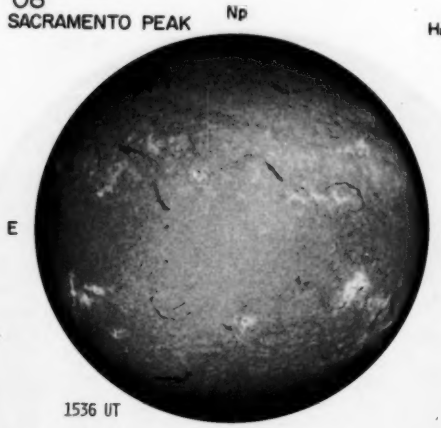




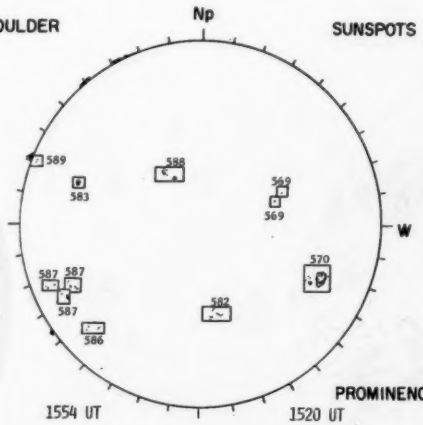


08

SACRAMENTO PEAK



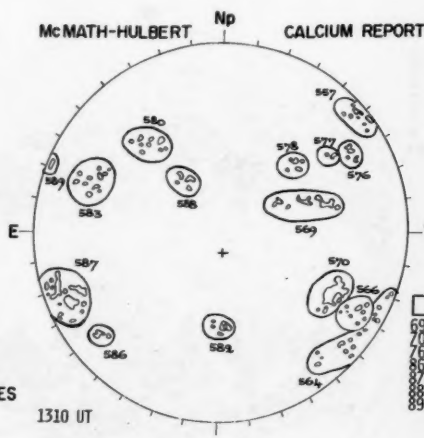
Hα BOULDER



SUNSPOTS

PROMINENCES

McMATH-HULBERT



CALCIUM REPORT

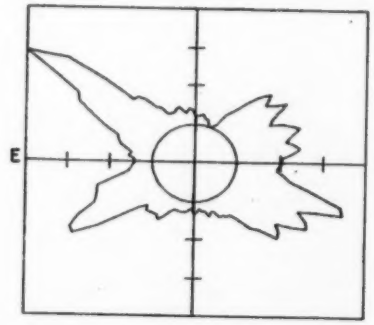
FAIR	D
69-	1500-2.5
70-	3000-3.0
76-	0600-2.5
86-	0500-2.5
87-	3600-3.0
89-	0500-2.5

OCTOBER 9, 1978 (P = 26.32, B_o = 6.28, L_o = 110.01)

SACRAMENTO PEAK

Np

CORONA (1.15 $R_\odot$)
5303 Å



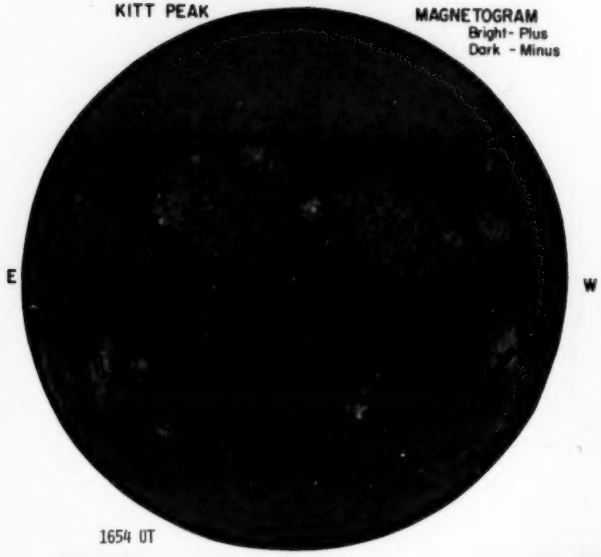
1612 UT

Sp

KITT PEAK

Np

MAGNETOGRAM
Bright - Plus
Dark - Minus



1654 UT

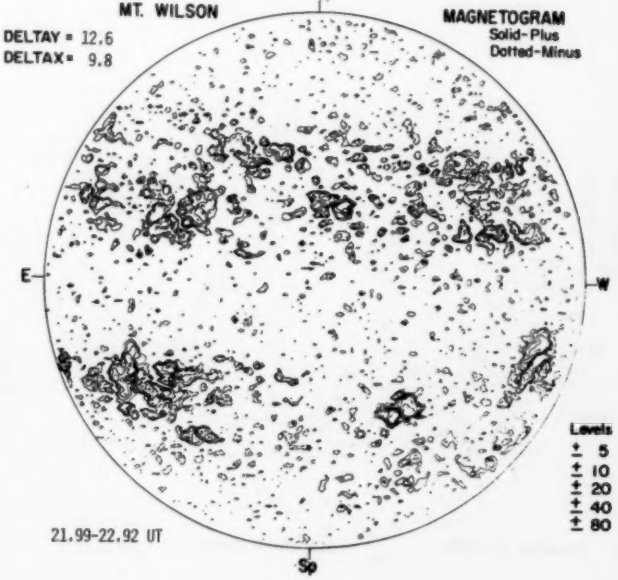
Sp

MT. WILSON

Np

DELTAY = 12.6
DELTAX = 9.8

MAGNETOGRAM
Solid - Plus
Dotted - Minus

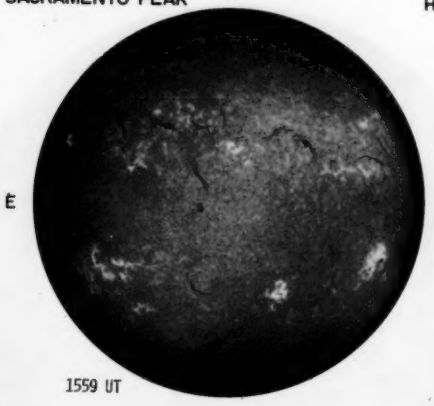


21.99-22.92 UT

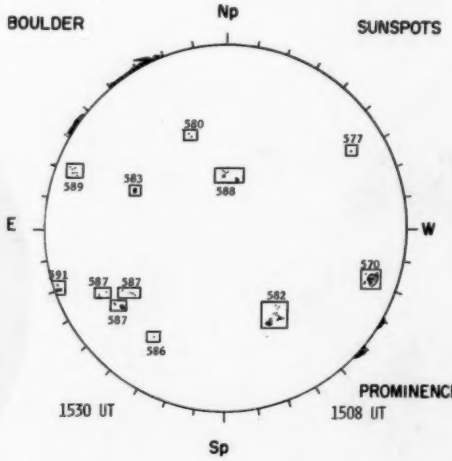
Sp

09

SACRAMENTO PEAK



Hα BOULDER



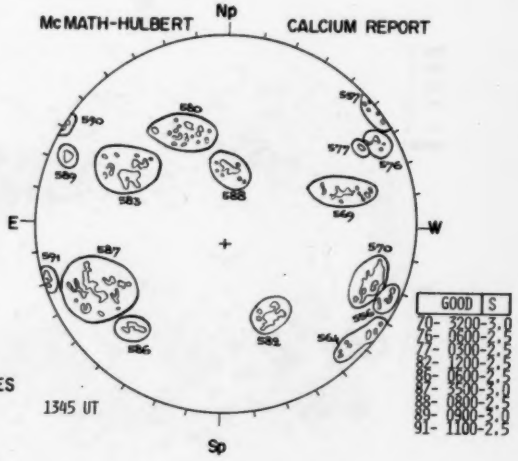
SUNSPOTS

PROMINENCES

1508 UT

McMATH-HULBERT

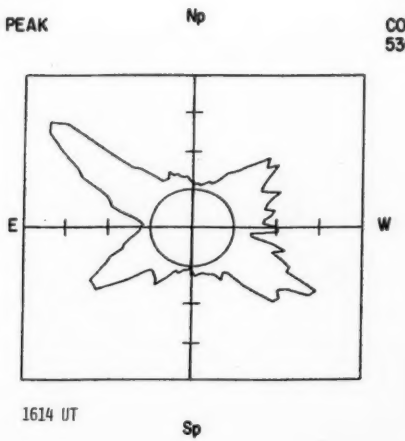
CALCIUM REPORT

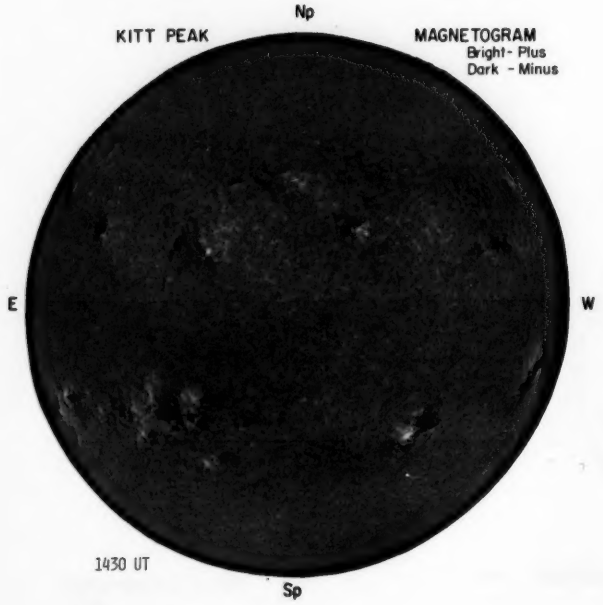


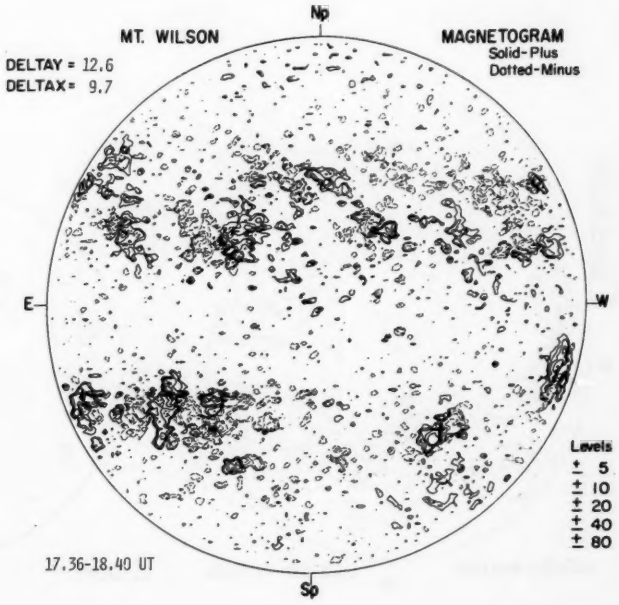
GOOD	S
70- 3200	3.0
79- 0600	2.5
77- 0500	2.5
82- 1200	3.0
86- 1200	3.0
87- 0600	3.0
87- 1500	3.0
88- 0800	2.5
88- 0900	3.0
91- 1100	2.5

OCTOBER 10, 1978 (P = 26.32, B_o = 6.22, L_o = 96.81)

SACRAMENTO PEAK





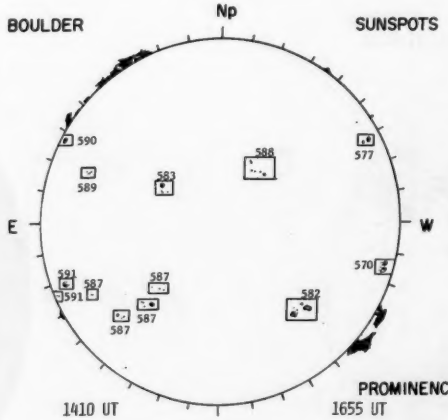


10

SACRAMENTO PEAK

1745 UT

Hα BOULDER



1410 UT

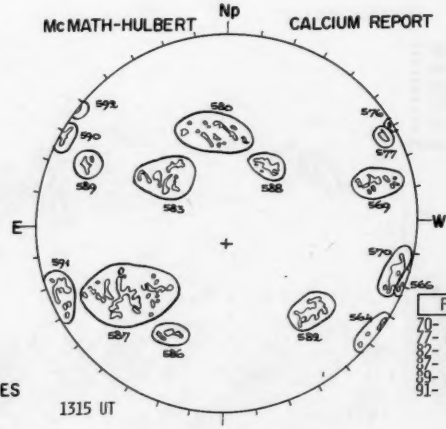
SUNSPOTS

PROMINENCES

1655 UT

McMATH-HULBERT

CALCULUM REPORT

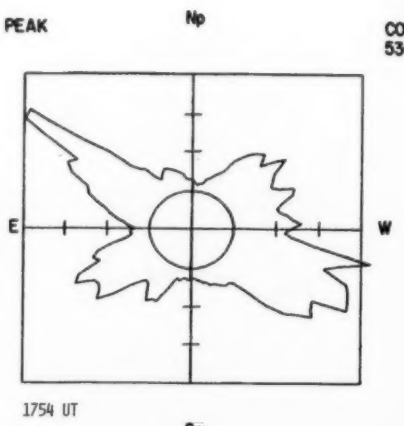


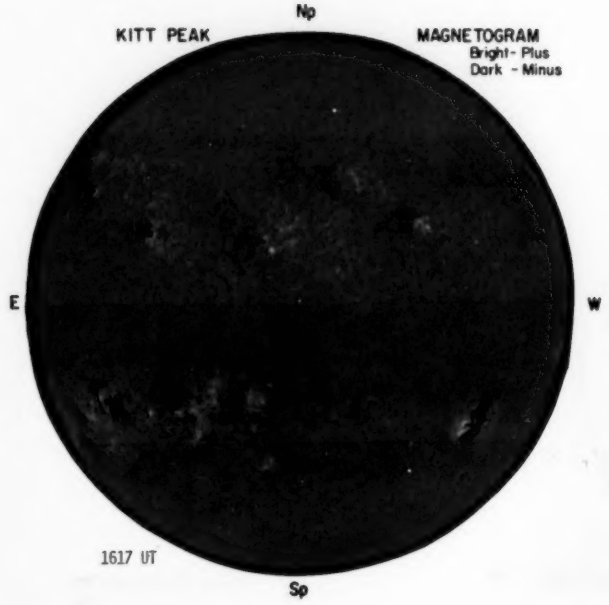
1315 UT

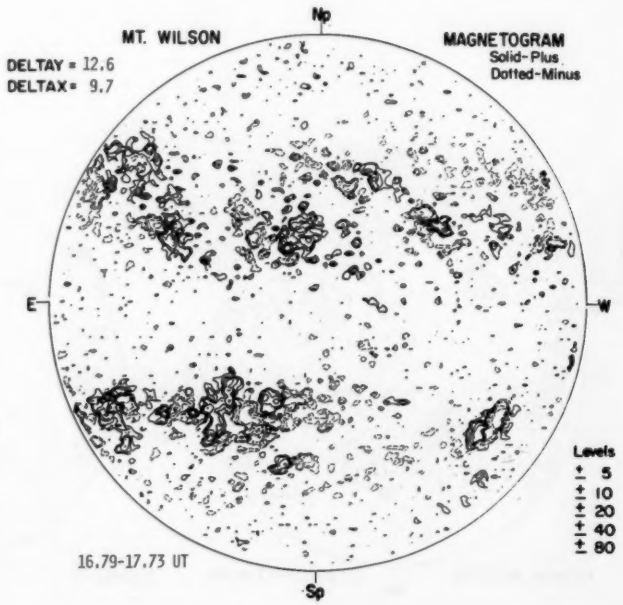
FAIR	D
70- 3200	3.0
77- 0500	2.5
82- 1600	2.5
87- 3800	3.0
89- 0800	3.0
91- 2200	3.0

OCTOBER 11, 1978 (P = 26.33, B_o = 6.15, L_o = 83.62)

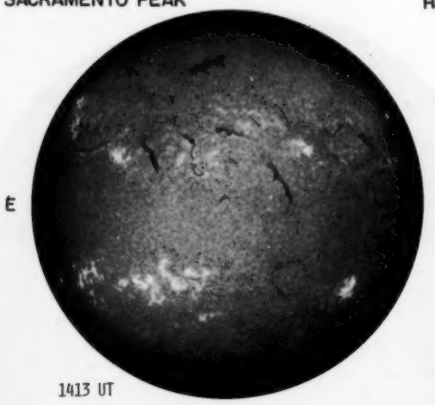
SACRAMENTO PEAK



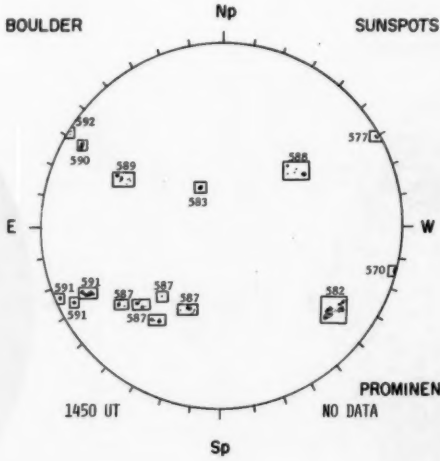




SACRAMENTO PEAK



Hα BOULDER

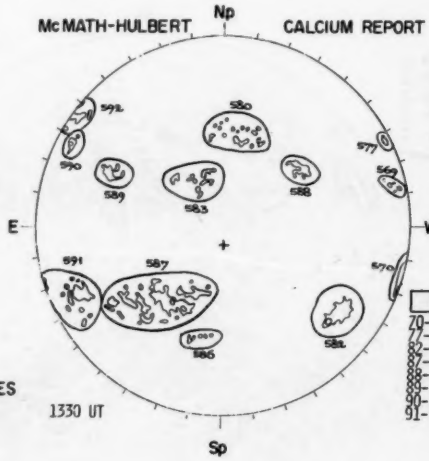


SUNSPOTS

PROMINENCES

NO DATA

McMATH-HULBERT



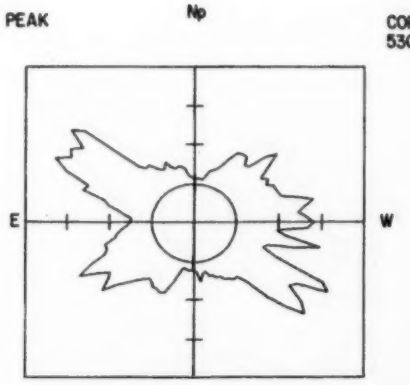
CALCIUM REPORT

FAIR	S
70- 3000	3.0
77- 0600	3.0
82- 2100	3.0
86- 1800	3.0
88- 0300	3.0
88- 0900	3.0
90- 1200	2.0
91- 3500	3.0

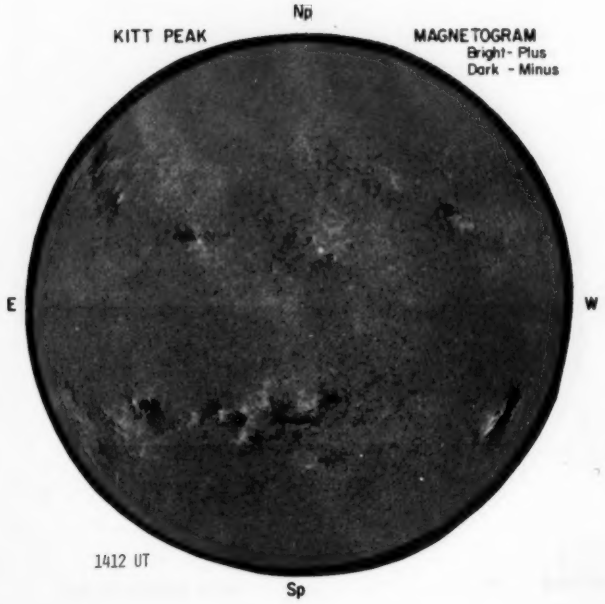
61
Oct 78

OCTOBER 12, 1978 (P = 26.32, B_o = 6.09, L_o = 70.43)

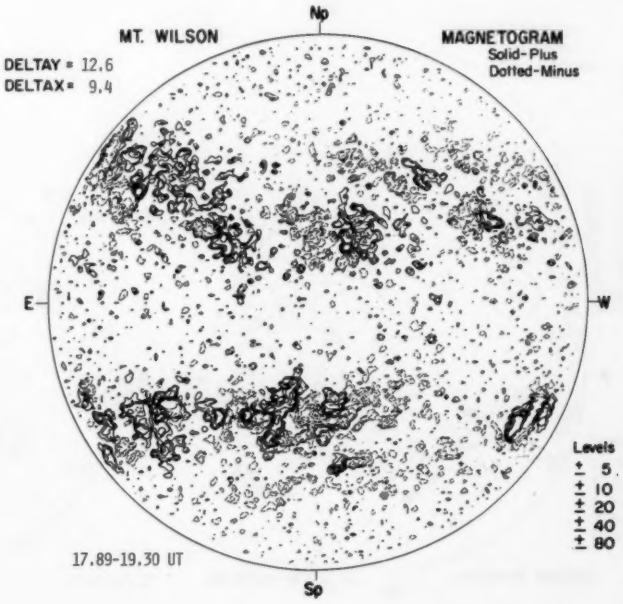
SACRAMENTO PEAK



1746 UT



1412 UT



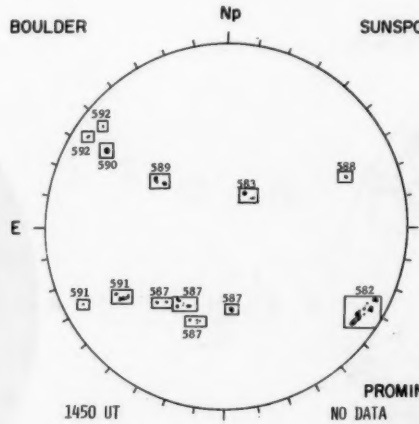
17.89-19.30 UT

12

SACRAMENTO PEAK

1417 UT

Hα BOULDER



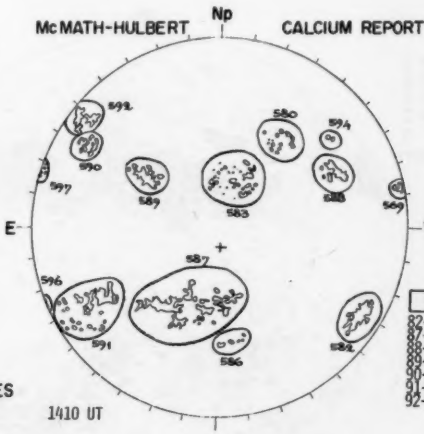
1450 UT

SUNSPOTS

PROMINENCES

NO DATA

McMATH-HULBERT



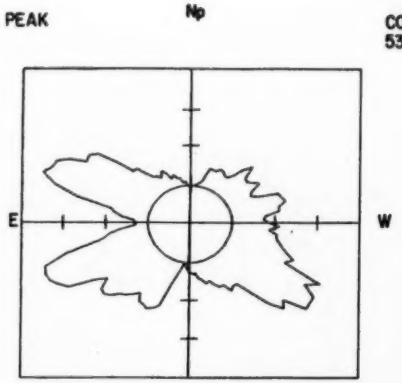
1410 UT

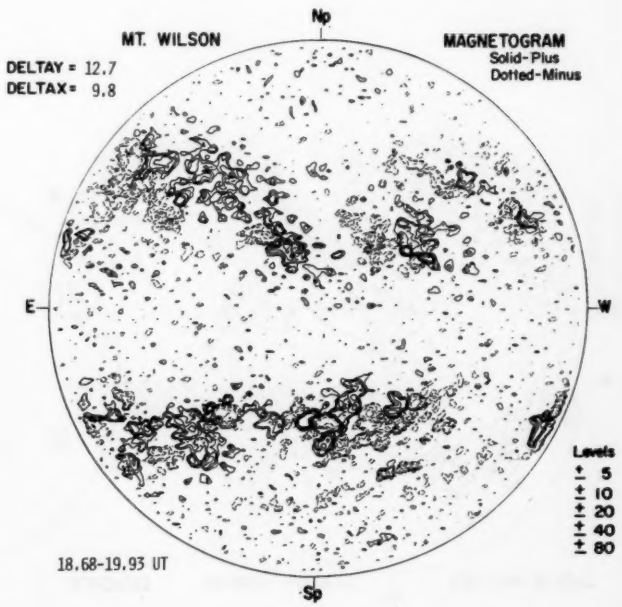
CALCIUM REPORT

FAIR	M
82- 2800	3.5
87- 4700	3.5
88- 1100	3.0
90- 1000	2.5
91- 3800	3.0
92- 2500	2.5

OCTOBER 13, 1978 (P = 26.31, B_o = 6.02, L_o = 57.24)

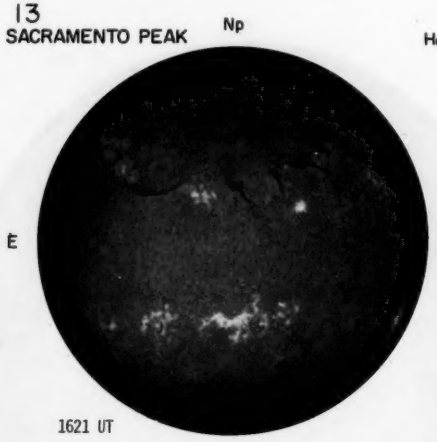
SACRAMENTO PEAK





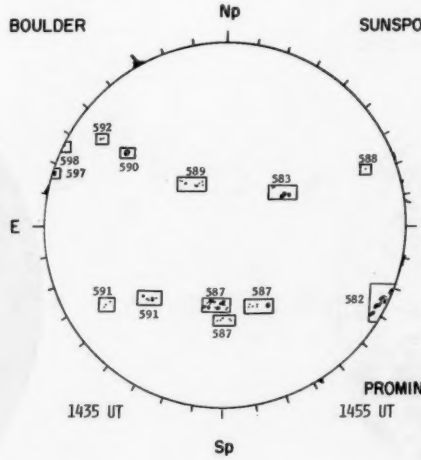
13

SACRAMENTO PEAK



1621 UT

Hα BOULDER



1435 UT

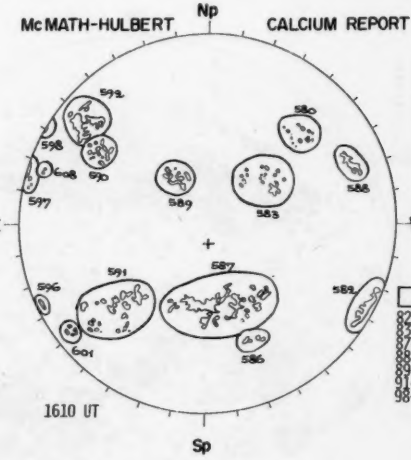
SUNSPOTS

PROMINENCES

1455 UT

McMATH-HULBERT

CALCIUM REPORT

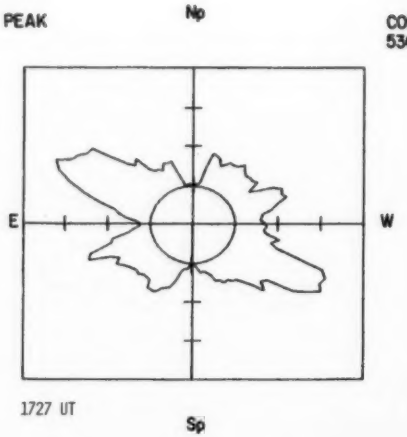


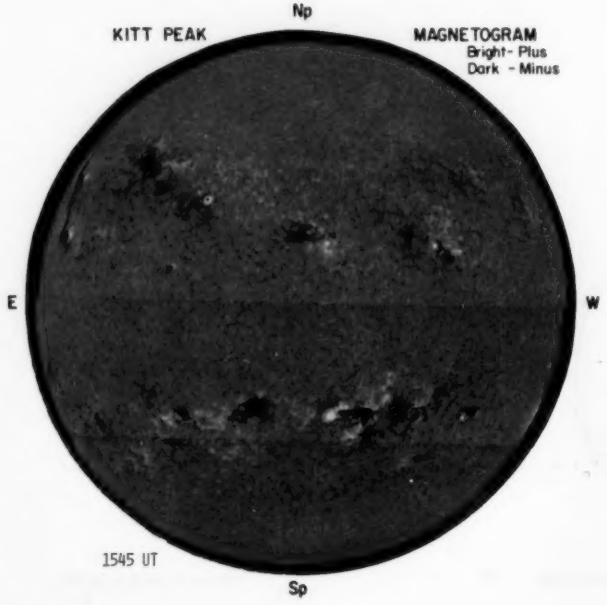
1610 UT

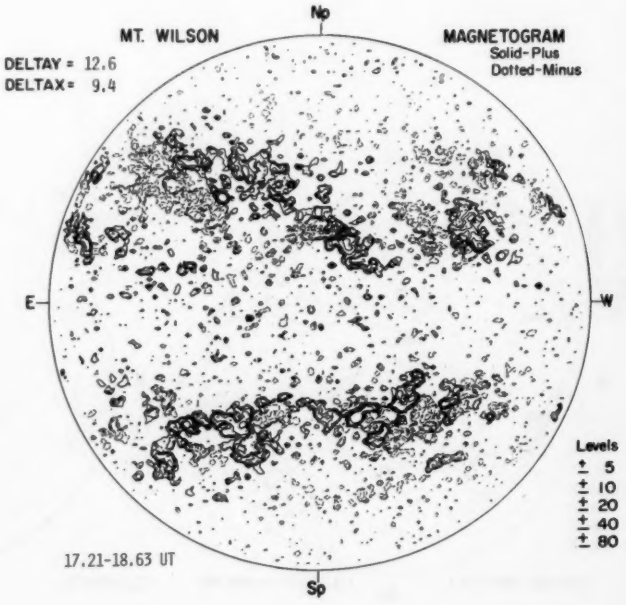
POOR	M
82- 2800-3.5	
85- 1200-2.5	
87- 4400-3.0	
88- 1100-2.5	
89- 1000-2.5	
91- 3500-2.5	
98- 0400-2.5	

OCTOBER 14, 1978 (P = 26.28, B_0 = 5.95, L_0 = 44.04)

SACRAMENTO PEAK

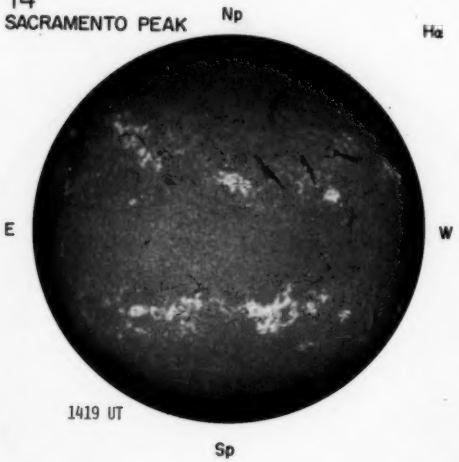






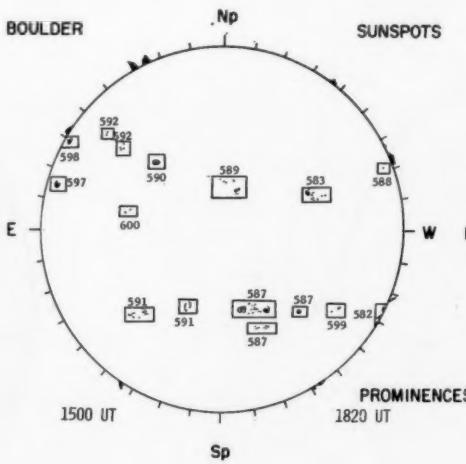
14

SACRAMENTO PEAK Hα



1419 UT

BOULDER SUNSPOTS

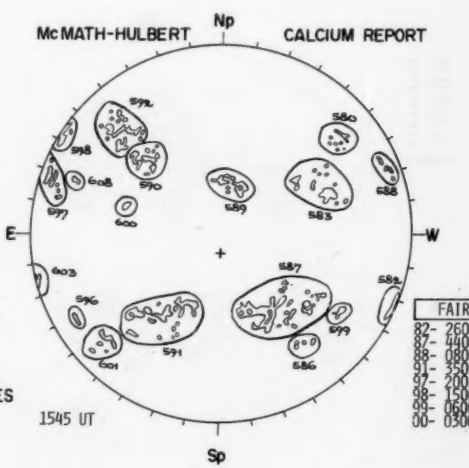


1500 UT

PROMINENCES

1820 UT

McMATH-HULBERT CALCIUM REPORT



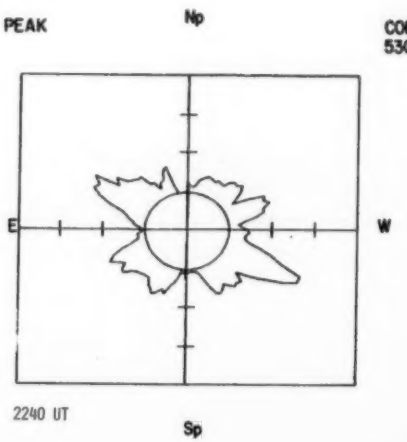
1545 UT

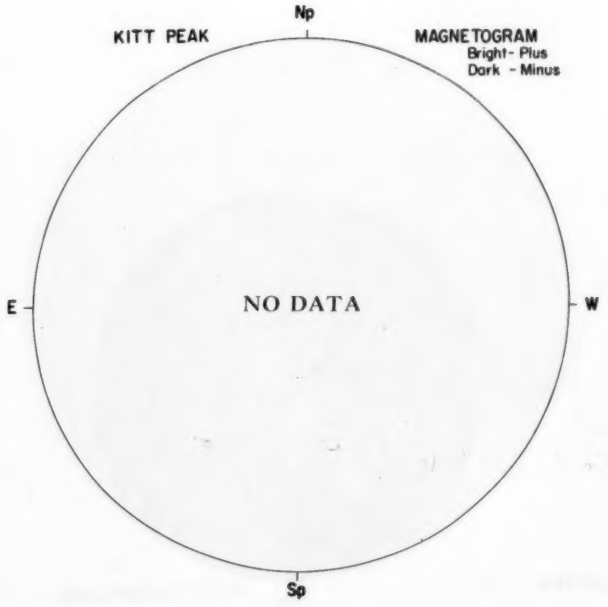
FAIR	S
82- 2600	3.0
87- 4400	3.0
88- 0800	2.5
91- 3500	3.0
97- 2000	3.0
98- 1500	3.0
99- 0600	2.5
00- 0300	2.5

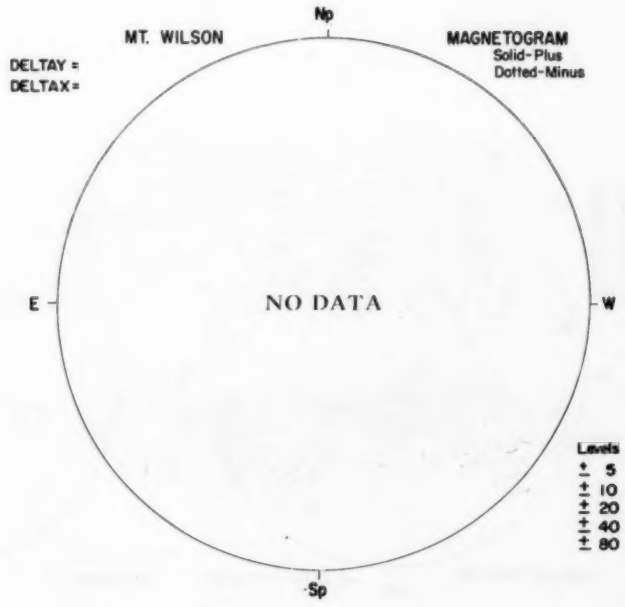
67
Oct 78

OCTOBER 15, 1978 (P = 26.26, B_o = 5.87, L_o = 30.85)

SACRAMENTO PEAK

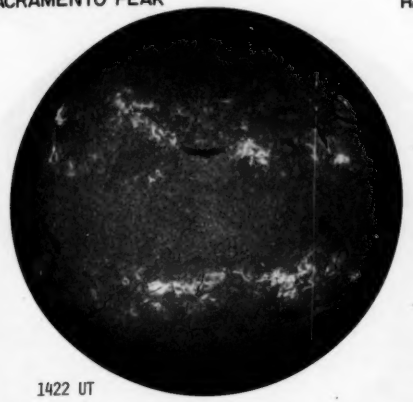




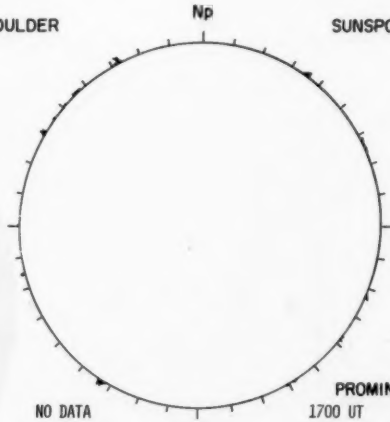


15

SACRAMENTO PEAK Np Hα

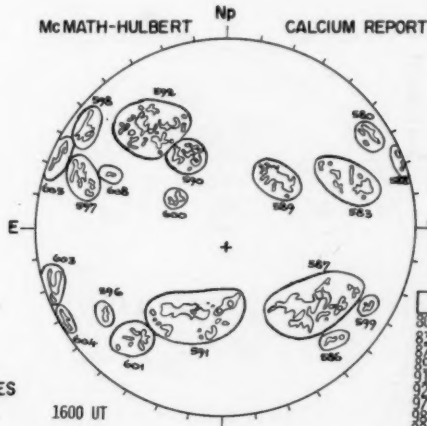


BOULDER Np SUNSPOTS



PROMINENCES

McMATH-HULBERT Np CALCIUM REPORT



FAIR	S
80- 0700-3.0	
85- 1800-2.5	
87- 0700-3.0	
89- 1600-2.5	
91- 2600-3.0	
94- 2500-2.5	
97- 1900-2.5	
98- 2600-3.0	
00- 0700-3.0	
03- 2000-2.5	
04- 0700-2.5	

OCTOBER 16, 1978 (P = 26.22, B_o = 5.80, L_o = 17.66)

SACRAMENTO PEAK

Np

CORONA (1.15 $R_\odot$)
5303 Å

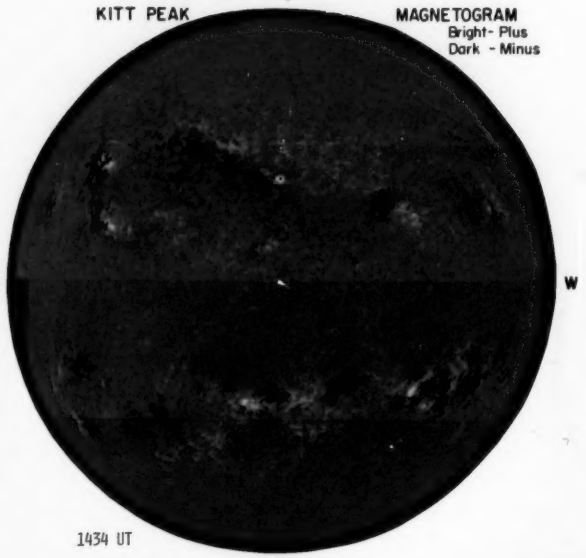
E — NO DATA — W

Sp

KITT PEAK

Np

MAGNETOGRAM
Bright - Plus
Dark - Minus



E W

1434 UT

Sp

MT. WILSON

Np

MAGNETOGRAM
Solid - Plus
Dotted - Minus

DELTAY =
DELTAX =

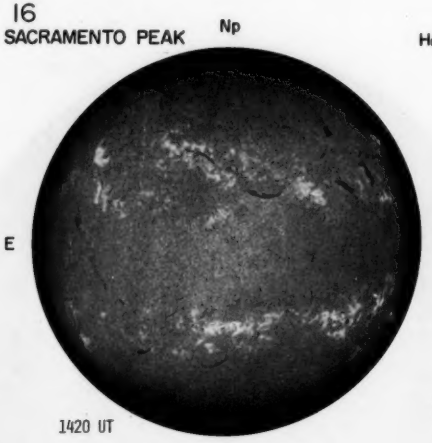
E — NO DATA — W

Levels
± 5
± 10
± 20
± 40
± 80

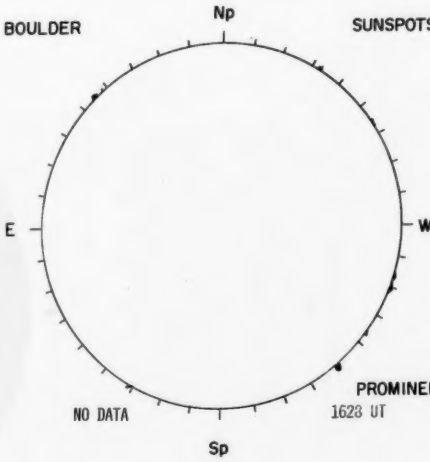
Sp

16

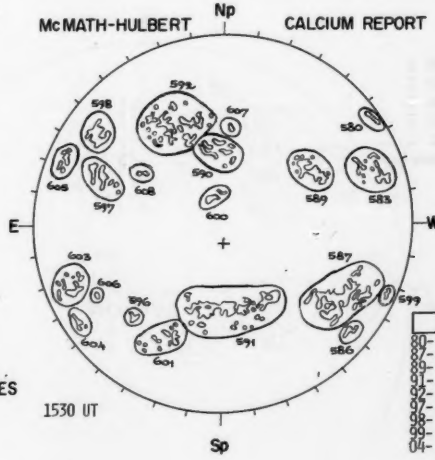
SACRAMENTO PEAK



Hα BOULDER



SUNSPOTS



PROMINENCES

McMATH-HULBERT

CALCIUM REPORT

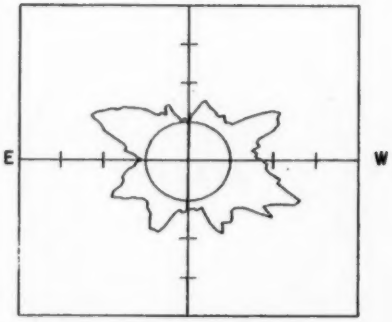
FAIR	S
80- 0700	2.5
87- 5000	3.0
89- 1700	2.5
91- 3500	3.5
92- 2500	2.5
97- 1900	3.0
98- 2600	3.5
98- 0600	2.5
04- 1000	2.5

OCTOBER 17, 1978 (P = 26.18, B_o = 5.72, L_o = 4.47)

SACRAMENTO PEAK

Np

CORONA (1.15 $R_\odot$)
5303 Å



1933 UT

Sp

KITT PEAK

Np

MAGNETOGRAM
Bright - Plus
Dark - Minus

1443 UT

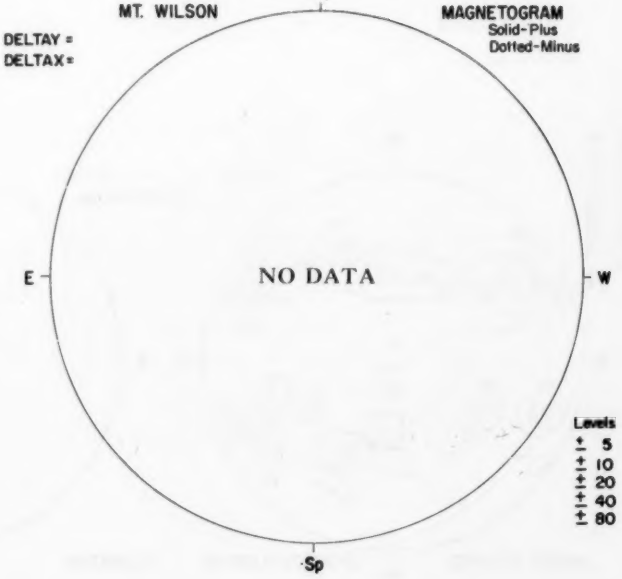
Sp

MT. WILSON

Np

MAGNETOGRAM
Solid - Plus
Dotted - Minus

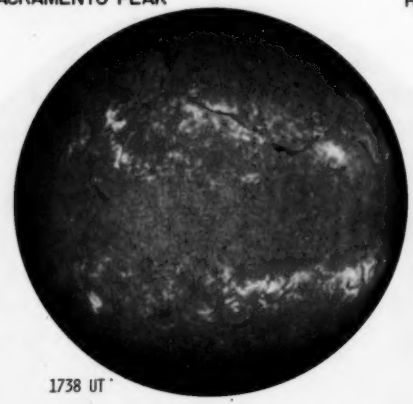
DELTAY =
DELTAX =



Sp

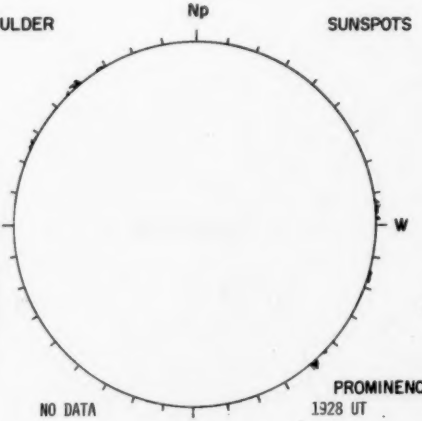
17

SACRAMENTO PEAK Hα



1738 UT

BOULDER SUNSPOTS

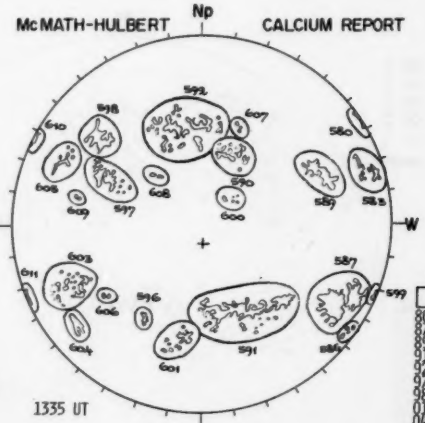


NO DATA

PROMINENCES

1928 UT

McMATH-HULBERT CALCIUM REPORT



1335 UT

GOOD	M
80- 0700-2.5	
87- 5600-3.0	
89- 2000-2.5	
91- 3800-3.5	
92- 2500-2.5	
97- 1800-3.0	
98- 2200-3.0	
01- 0600-2.5	
04- 1100-2.5	
10- 1000-3.5	

73
Oct 78

OCTOBER 18, 1978 (P = 26.12, B_o = 5.64, L_o = 351.28)

SACRAMENTO PEAK

Np

CORONA (1.15 $R_\odot$)
5303 Å

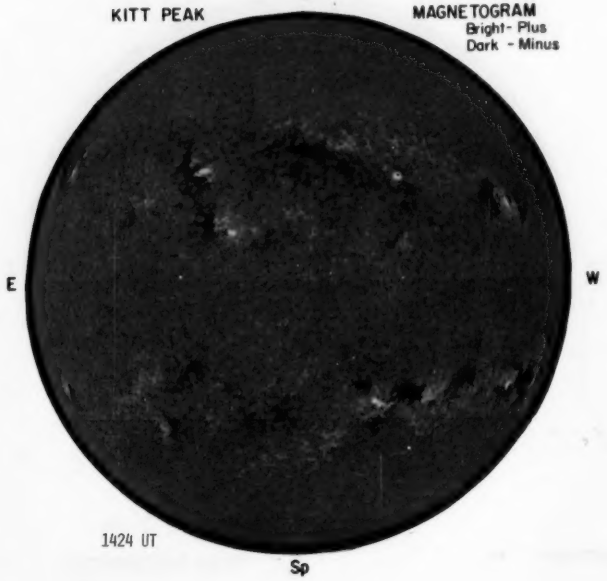
E — NO DATA — W

Sp

KITT PEAK

Np

MAGNETOGRAM
Bright - Plus
Dark - Minus



E W

1424 UT

Sp

MT. WILSON

Np

MAGNETOGRAM
Solid - Plus
Dotted - Minus

DELTAY =
DELTAX =

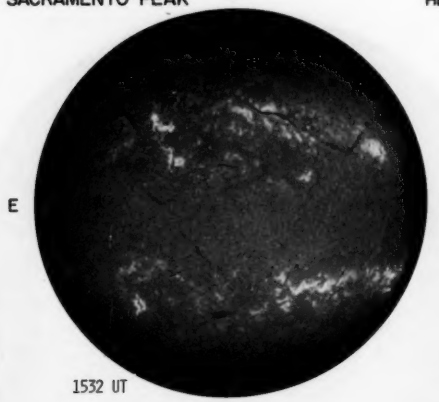
E — NO DATA — W

Levels
+ 5
+ + 10
+ + + 20
+ + + + 40
+ + + + + 80

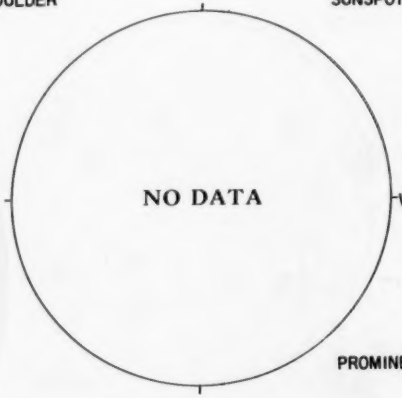
Sp

18

SACRAMENTO PEAK

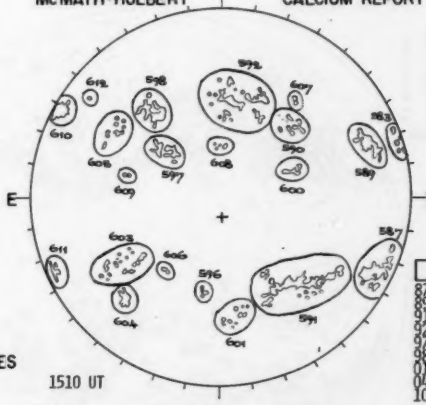


Hα BOULDER



SUNSPOTS

McMATH-HULBERT



CALCIUM REPORT

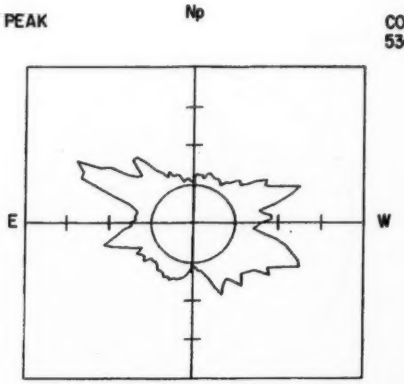
PROMINENCES

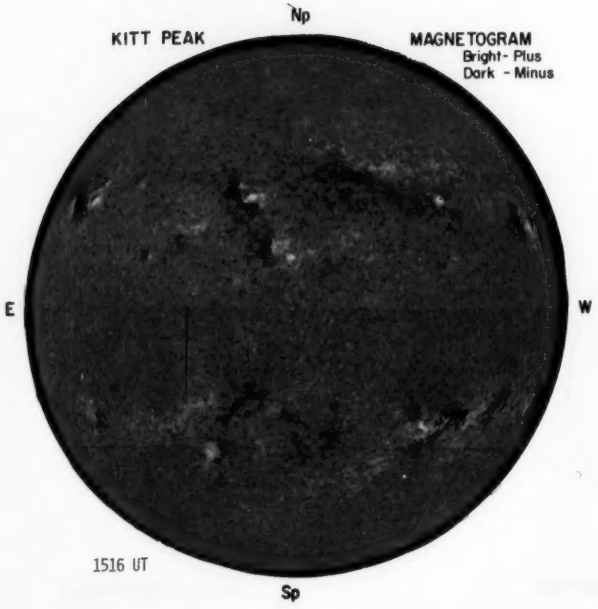
POOR	M
87- 5400	3.0
88- 2700	3.0
91- 3900	2.5
92- 2500	2.5
97- 1500	2.5
98- 1800	2.5
01- 0500	2.5
04- 1100	3.0
10- 2000	3.5

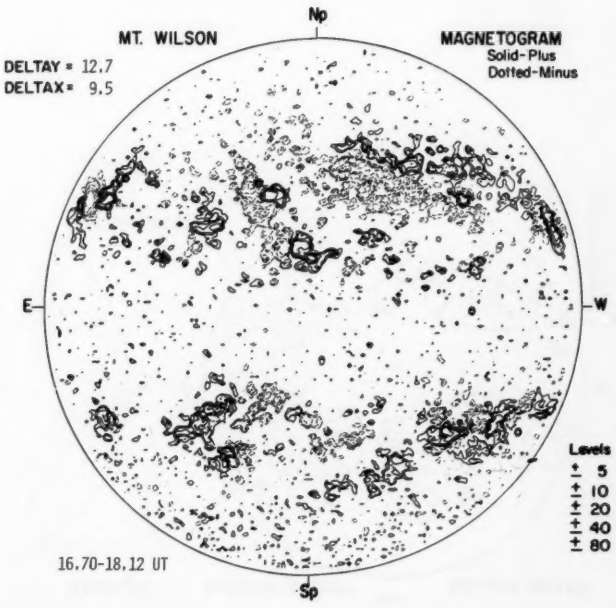
75
Oct 78

OCTOBER 19, 1978 (P = 26.07, B_o = 5.57, L_o = 338.09)

SACRAMENTO PEAK

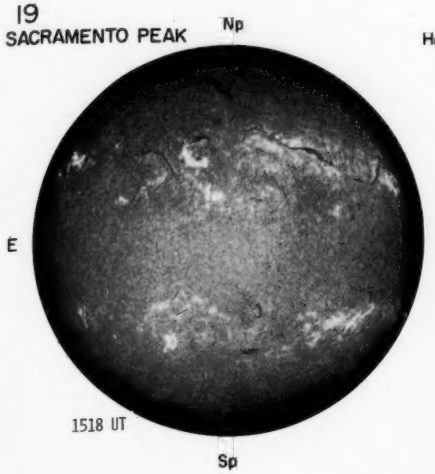




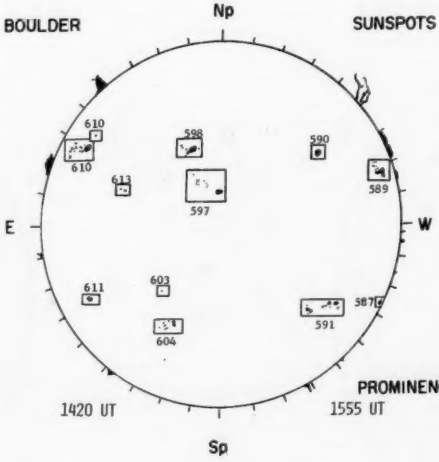


19

SACRAMENTO PEAK



Hα BOULDER



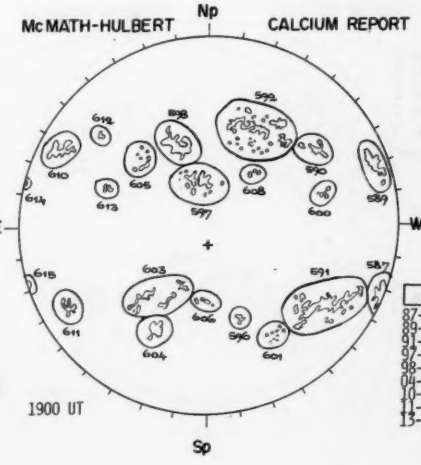
SUNSPOTS

PROMINENCES

1555 UT

McMATH-HULBERT

CALCIUM REPORT

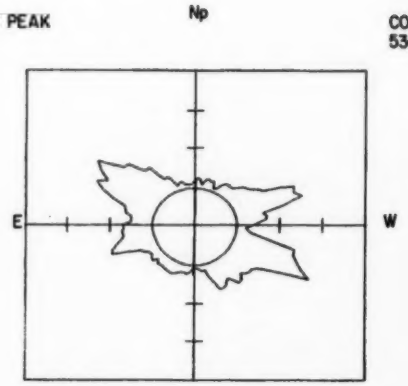


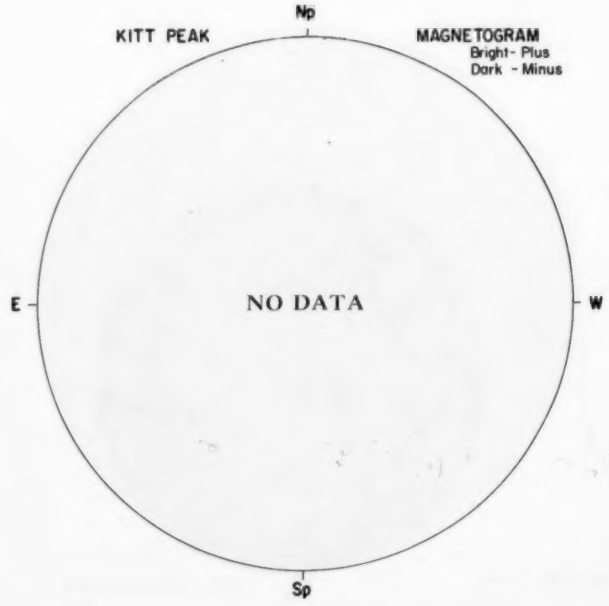
FAIR	M
87- 3800	2.0
89- 3000	3.0
91- 4200	3.5
97- 1300	3.0
98- 2000	3.0
04- 1200	3.5
10- 2000	3.5
11- 1000	3.0
13- 0200	2.5

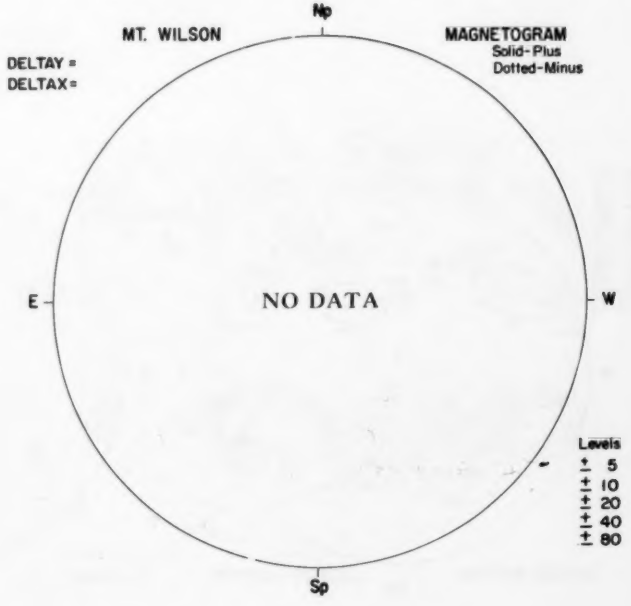
77
Oct 78

OCTOBER 20, 1978 (P = 26.00, B_o = 5.48, L_o = 324.90)

SACRAMENTO PEAK



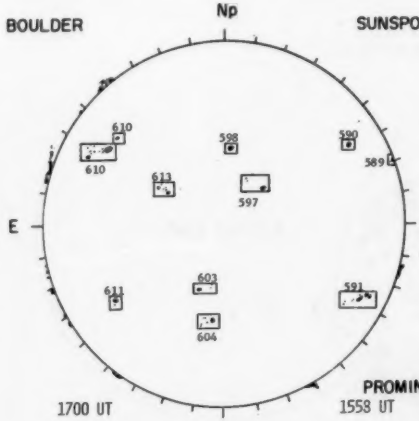




20

SACRAMENTO PEAK

Hα BOULDER



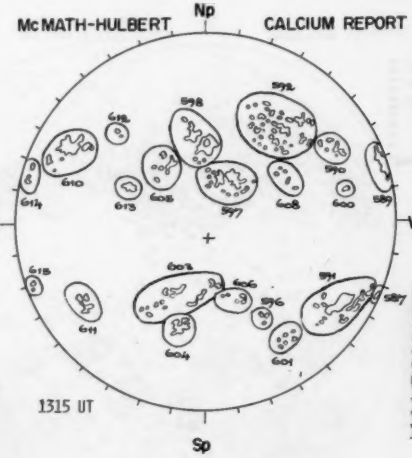
SUNSPOTS

PROMINENCES

1558 UT

McMATH-HULBERT

CALCIUM REPORT

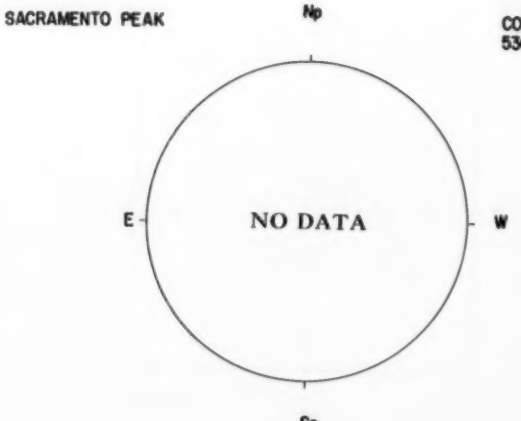


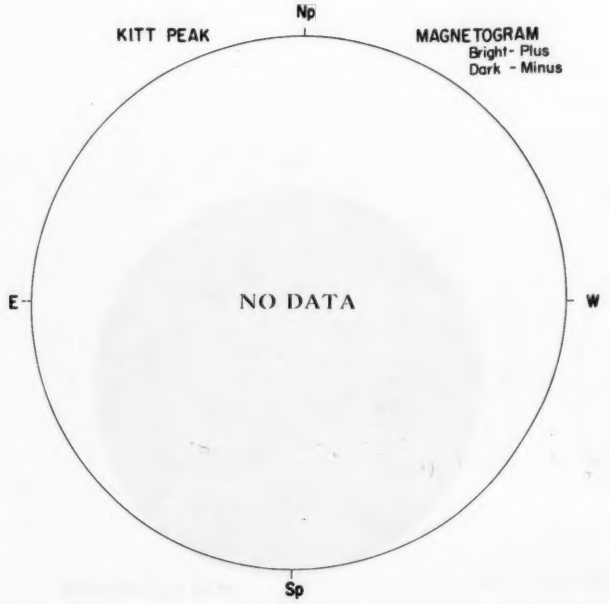
FAIR	D
89- 2700	3.5
91- 3900	3.5
92- 2500	3.0
97- 1500	3.0
98- 2000	3.0
04- 1200	3.0
10- 2200	3.0
11- 1000	3.0
13- 0400	2.5
14- 0600	3.0

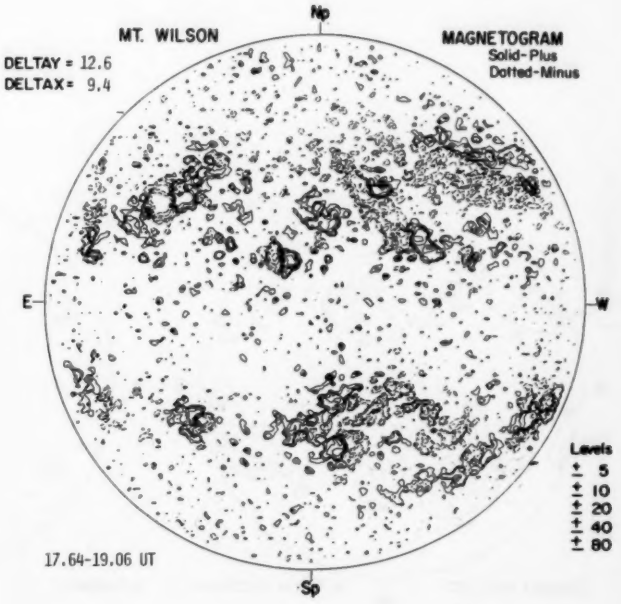
79
Oct 78

OCTOBER 21, 1978 (P = 25.93, B_0 = 5.40, L_0 = 311.71)

SACRAMENTO PEAK



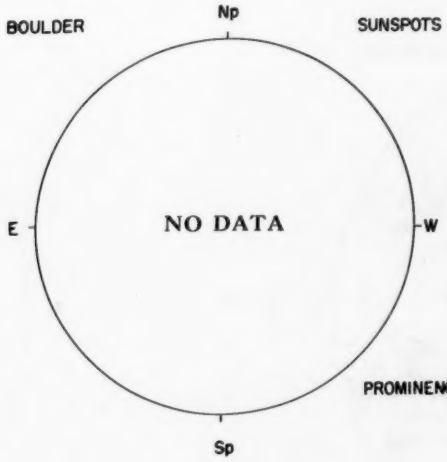




21

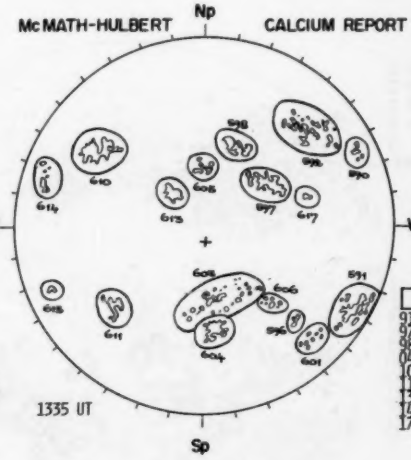
SACRAMENTO PEAK

Hα BOULDER



SUNSPOTS

McMATH-HULBERT



CALCIUM REPORT

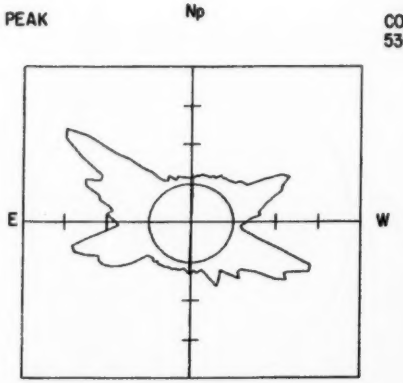
PROMINENCES

FAIR	M
91- 4000-3.5	
97- 1700-3.0	
98- 2000-3.0	
04- 1400-3.5	
10- 2400-3.0	
11- 1000-3.0	
13- 0800-3.0	
14- 0800-2.5	
17- 0200-2.5	

81
Oct 78

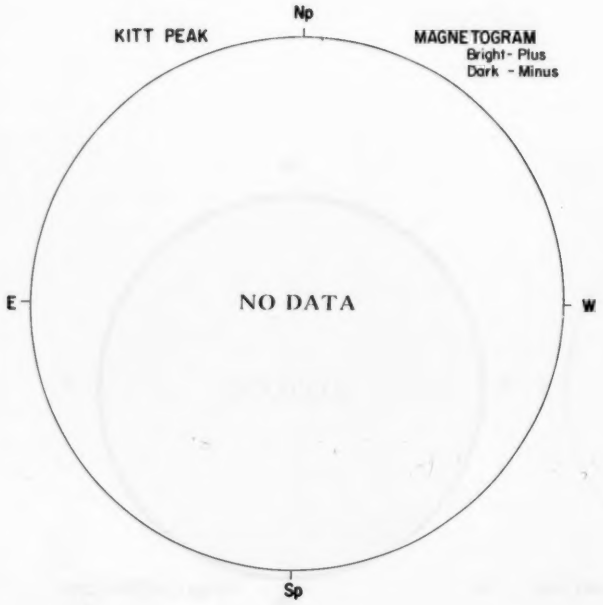
OCTOBER 22, 1978 (P = 25.84, B_o = 5.32, L_o = 298.52)

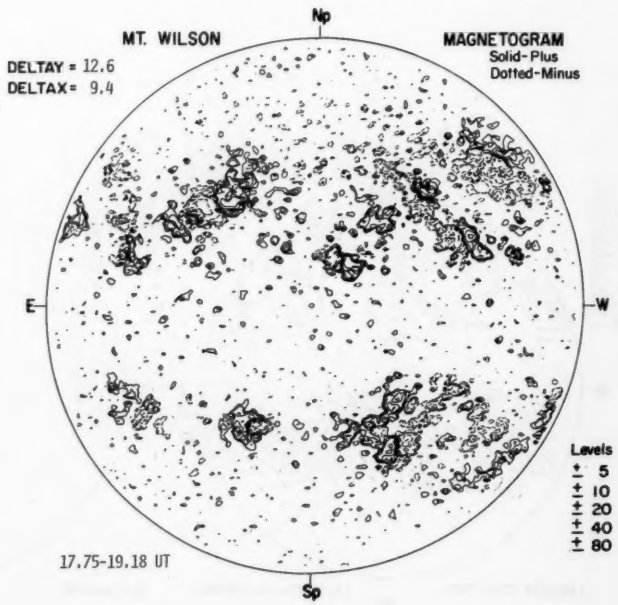
SACRAMENTO PEAK



CORONA (1.15 $R_\odot$)
5303 Å

1423 UT

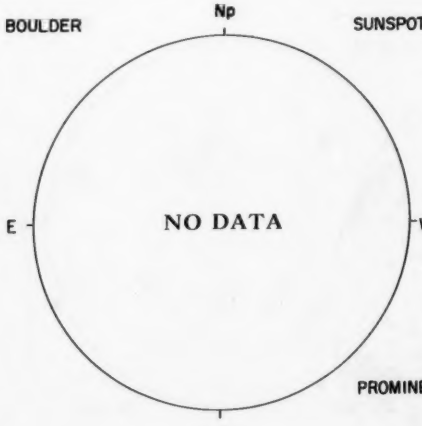




22

SACRAMENTO PEAK

Hα BOULDER

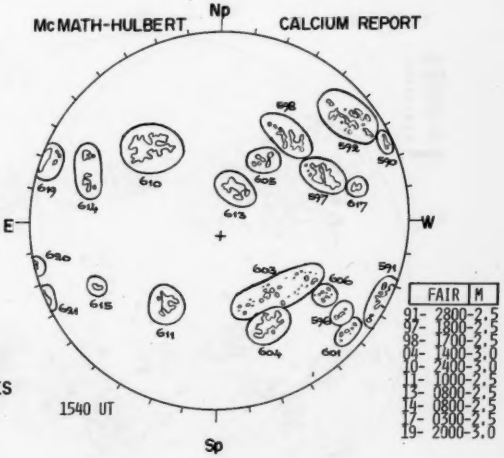


SUNSPOTS

PROMINENCES

McMATH-HULBERT

CALCIUM REPORT

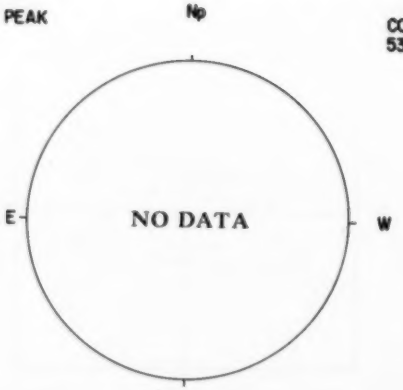


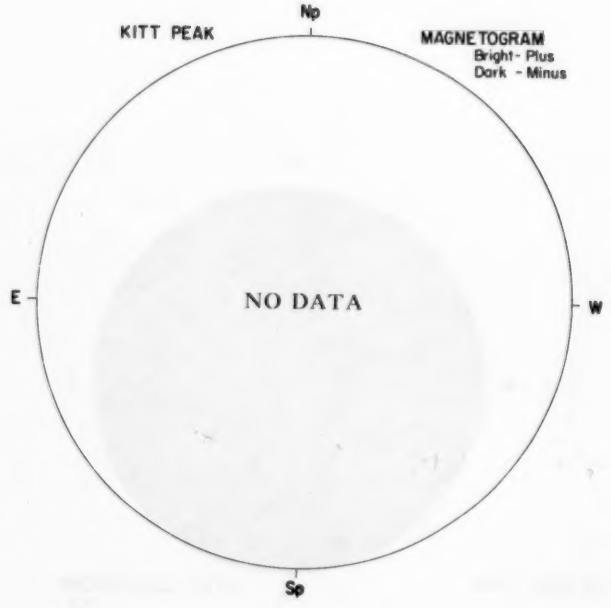
83
Oct 78

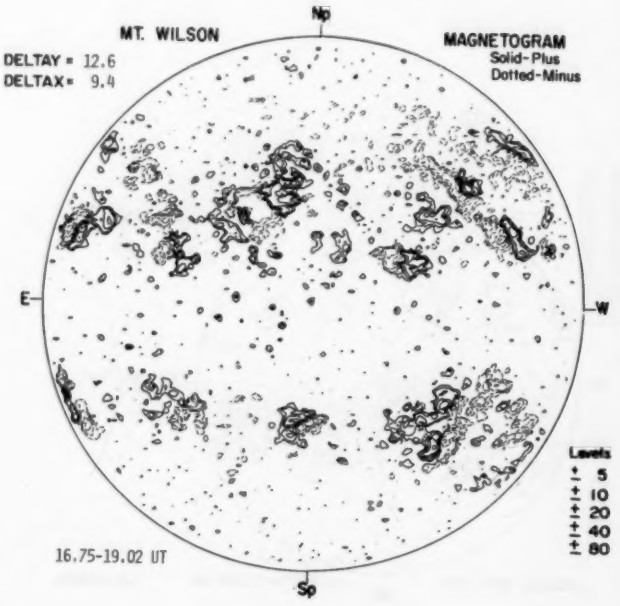
OCTOBER 23, 1978 (P = 25.75, B_o = 5.23, L_o = 285.33)

SACRAMENTO PEAK

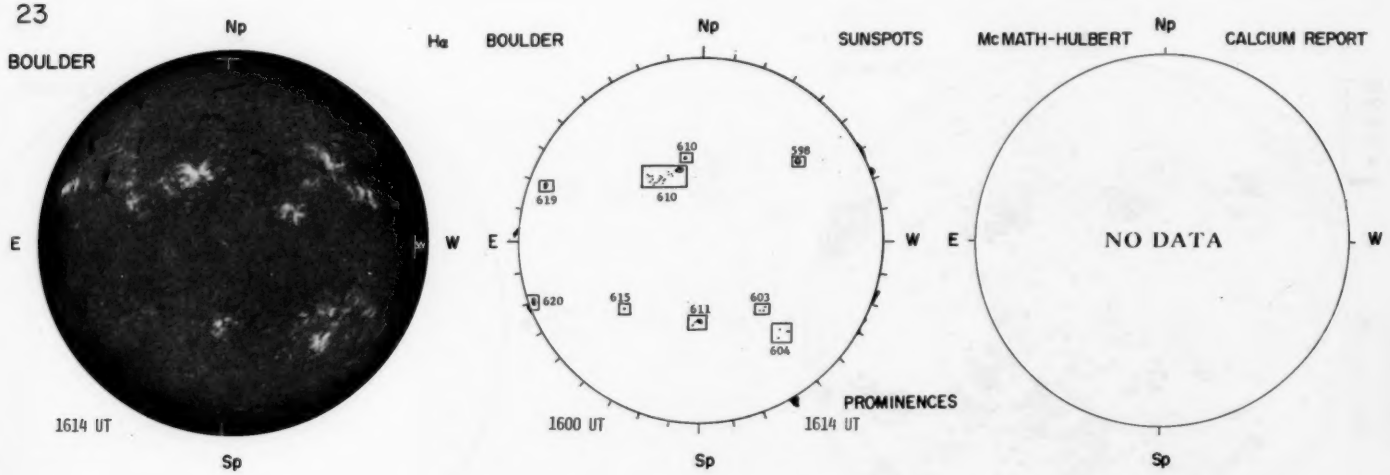
CORONA (1.15 $R_\odot$)
5303 Å





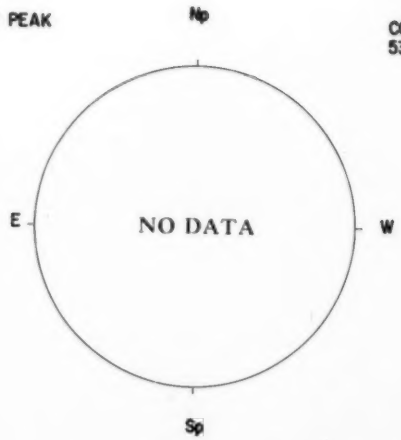


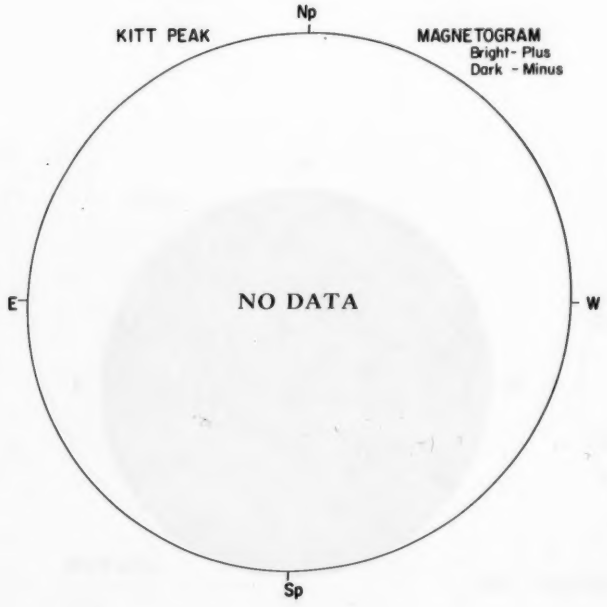
23

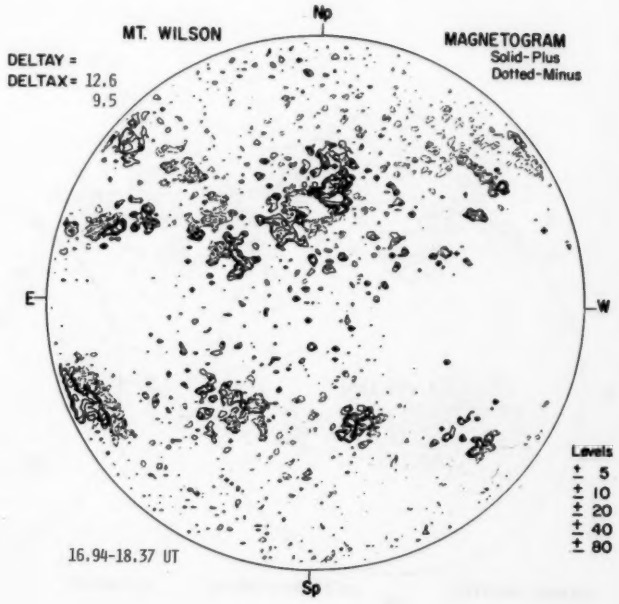

Np
BOULDER
E
W
1614 UT
Sp
Hα
BOULDER
Np
SUNSPOTS
610
598
619
610
E
W
620
615
611
603
604
1600 UT
PROMINENCES
1614 UT
Sp
McMATH-HULBERT
Np
CALCIUM REPORT
E
NO DATA
W
Sp

OCTOBER 24, 1978 (P = 25.66, B_o = 5.14, L_o = 272.14)

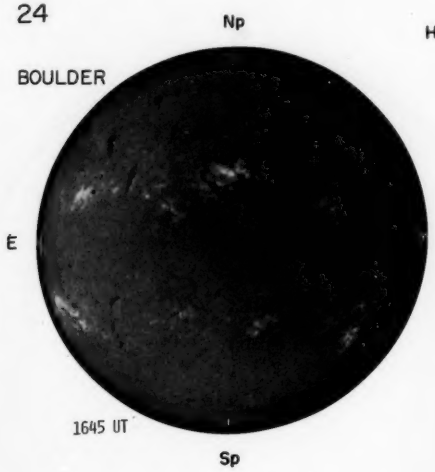
SACRAMENTO PEAK

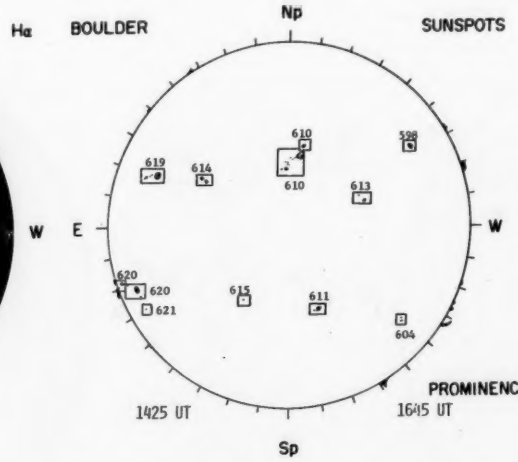


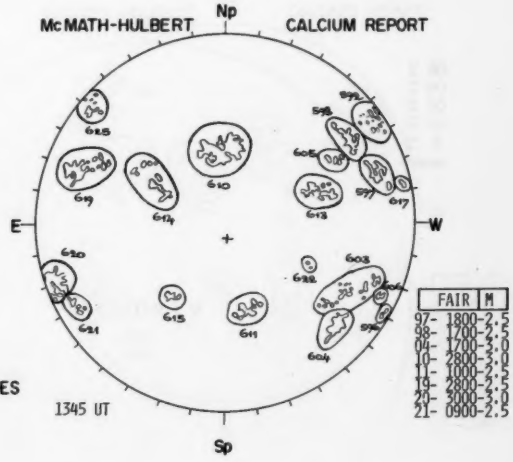




24





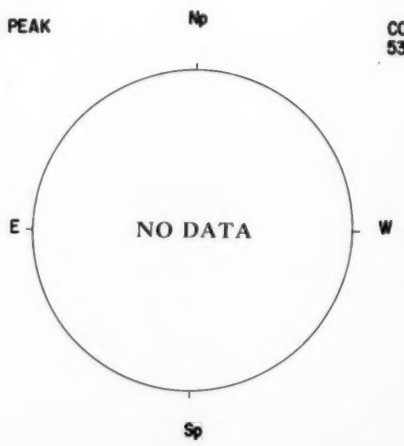


FAIR	M
97- 1800	2.5
98- 1700	2.5
04- 1700	3.0
10- 2800	3.0
11- 1000	2.5
19- 2800	2.5
20- 3000	3.0
21- 0900	2.5

OCTOBER 25, 1978 (P = 25.55, B_o = 5.05, L_o = 258.96)

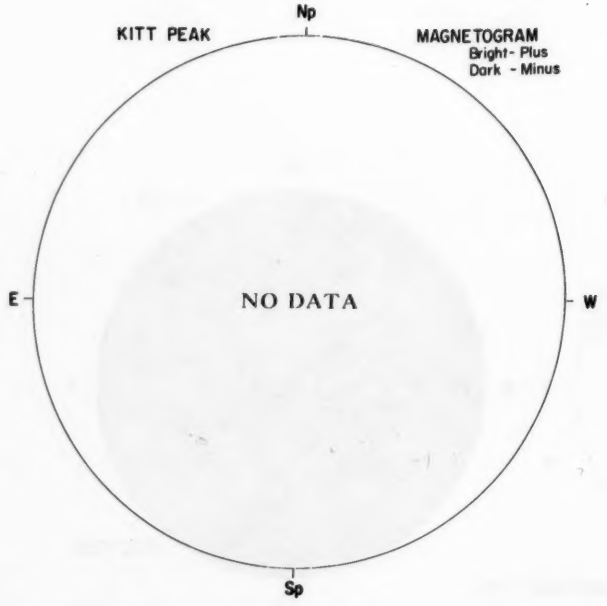
SACRAMENTO PEAK

CORONA (1.15 $R_\odot$)
5303 Å



KITT PEAK

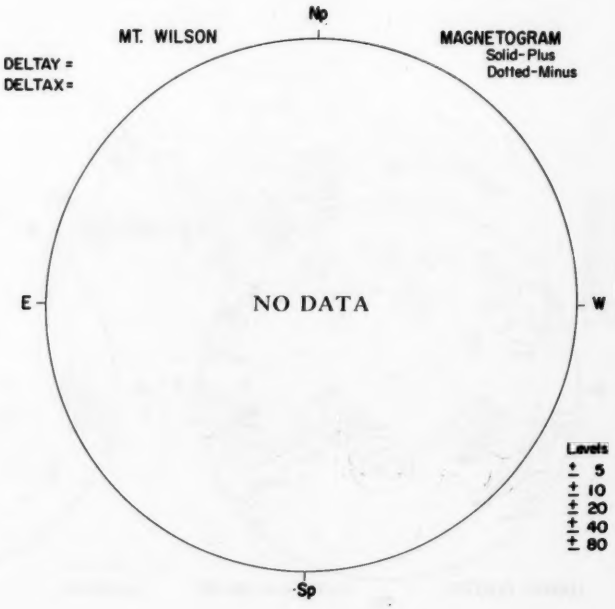
MAGNETOGRAM
Bright - Plus
Dark - Minus



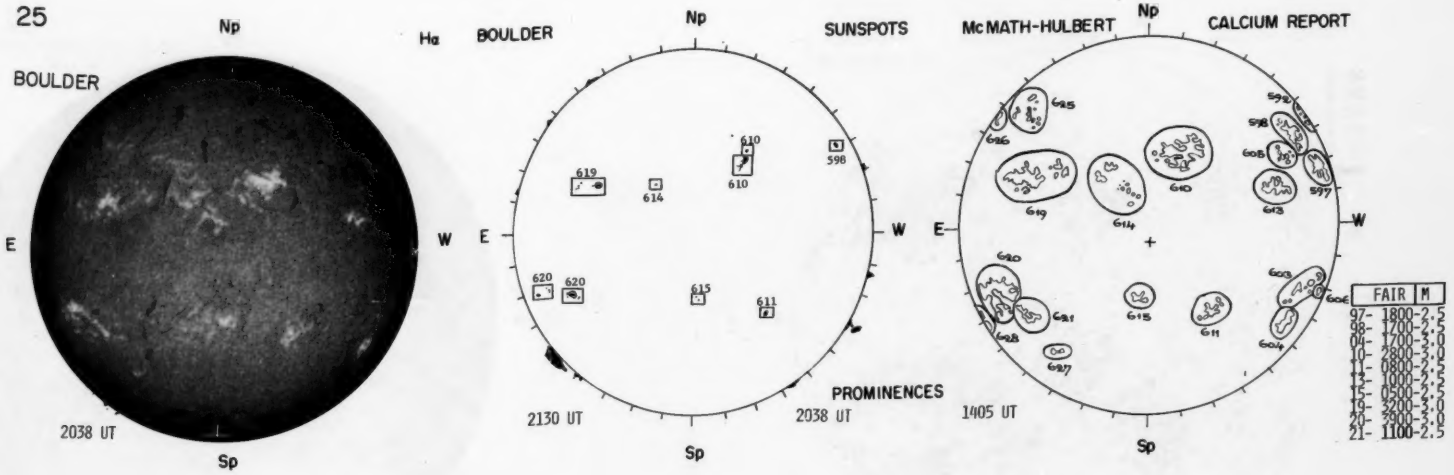
MT. WILSON

DELTAY =
DELTAX =

MAGNETOGRAM
Solid - Plus
Dotted - Minus



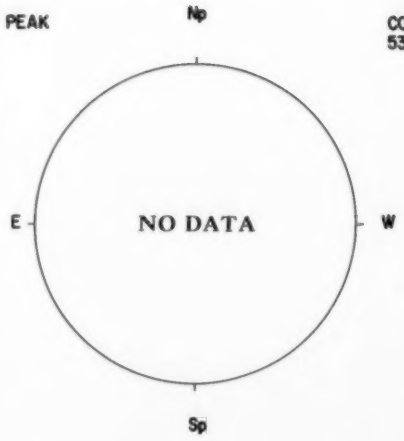
25

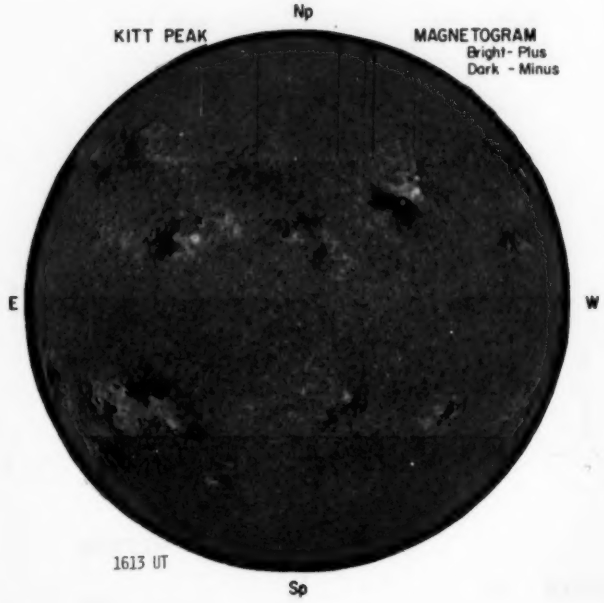

BOULDER
Np
Hα
E
W
Sp
2038 UT
BOULDER
SUNSPOTS
Np
E
W
Sp
2130 UT
2038 UT
PROMINENCES
McMATH-HULBERT
CALCIUM REPORT
Np
E
W
Sp
1405 UT
FAIR M
97- 1800-2.5
98- 1700-2.5
04- 1700-3.0
10- 2800-3.0
11- 0800-2.5
13- 1000-2.5
15- 0500-2.5
19- 3200-3.0
20- 3900-3.0
21- 1100-2.5

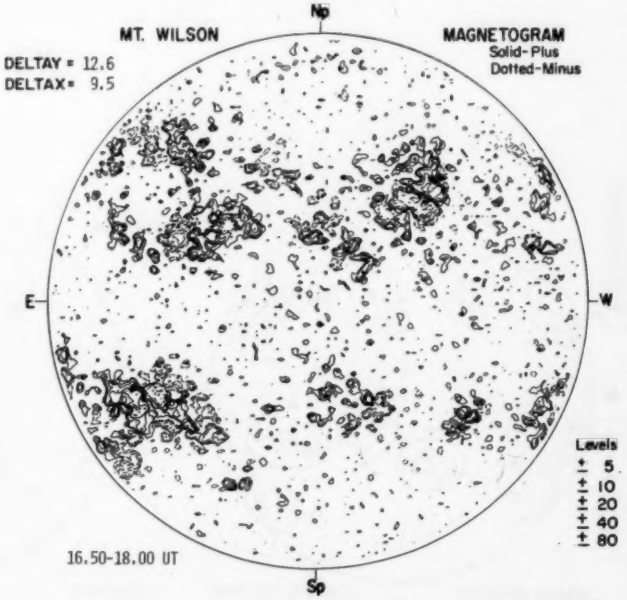
OCTOBER 26, 1978 (P = 25.44, B_o = 4.96, L_o = 245.77)

SACRAMENTO PEAK

CORONA (1.15 $R_\odot$)
5303 Å

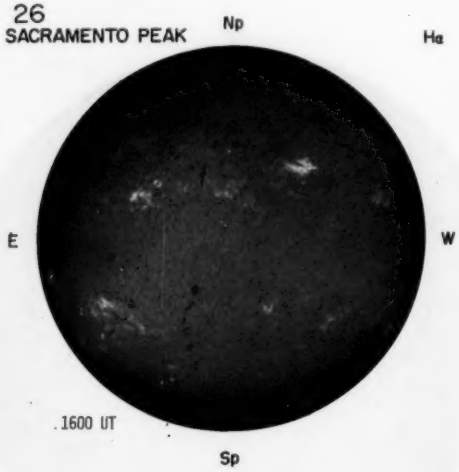






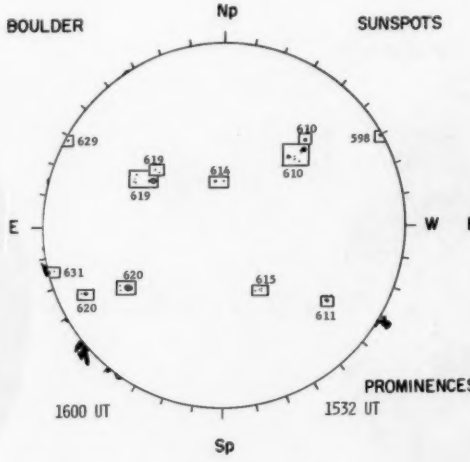
26

SACRAMENTO PEAK



1600 UT

Hα BOULDER



1600 UT

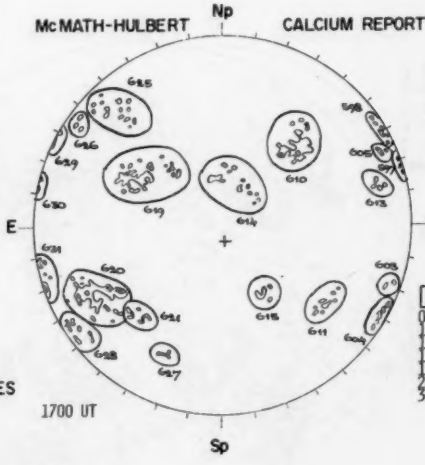
SUNSPOTS

PROMINENCES

1532 UT

McMATH-HULBERT

CALCIUM REPORT



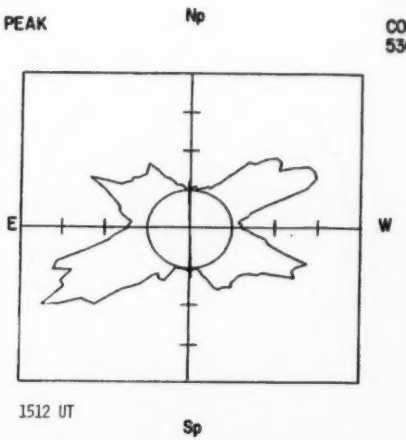
1700 UT

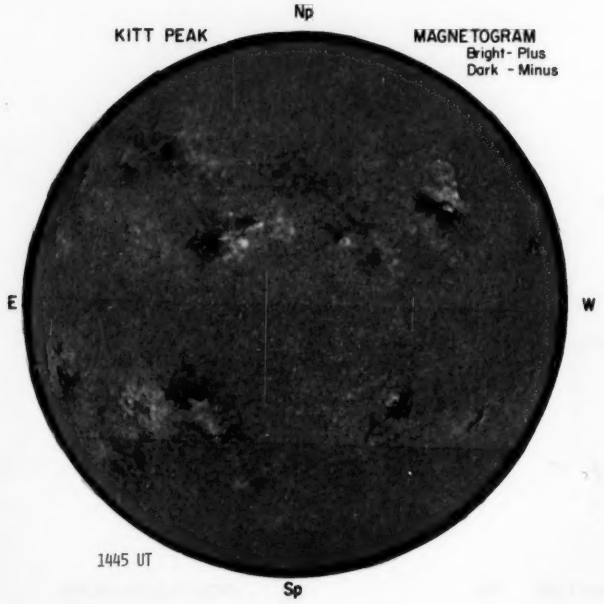
GOOD	M
04- 1500	3.0
10- 2800	3.0
12- 0700	2.5
17- 0400	2.5
19- 2900	3.0
20- 3800	3.0
31- 2000	2.5

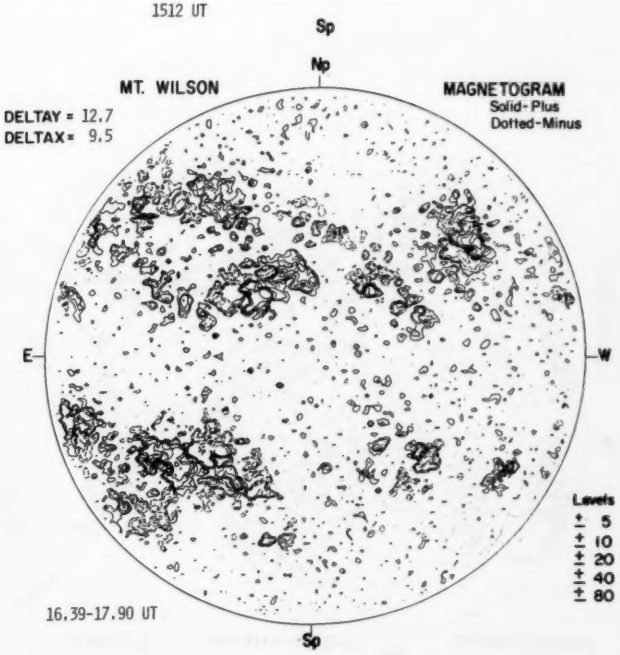
91
Oct 78

OCTOBER 27, 1978 (P = 25.32, B_o = 4.87, L_o = 232.58)

SACRAMENTO PEAK

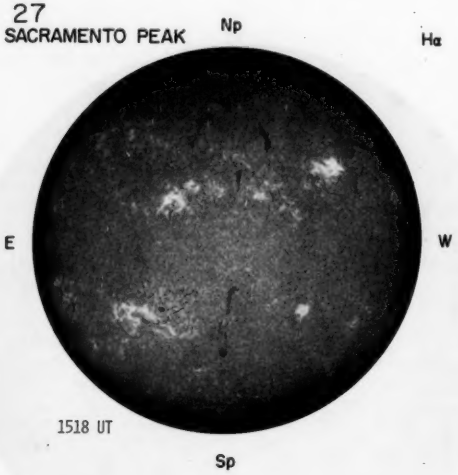




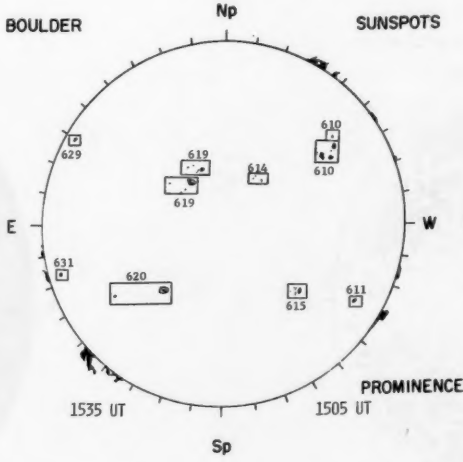


27

SACRAMENTO PEAK



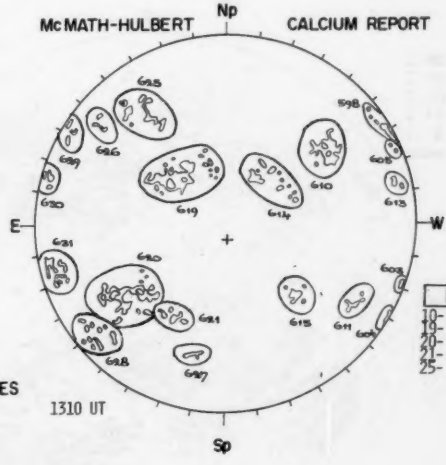
Hα BOULDER



SUNSPOTS

PROMINENCES

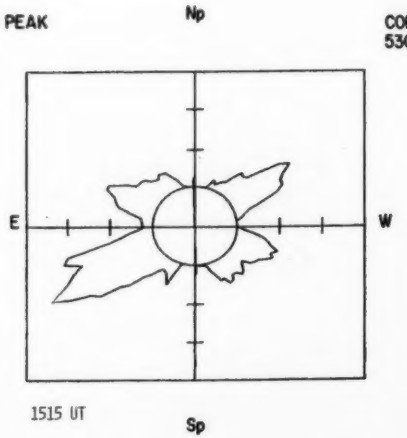
McMATH-HULBERT CALCIUM REPORT

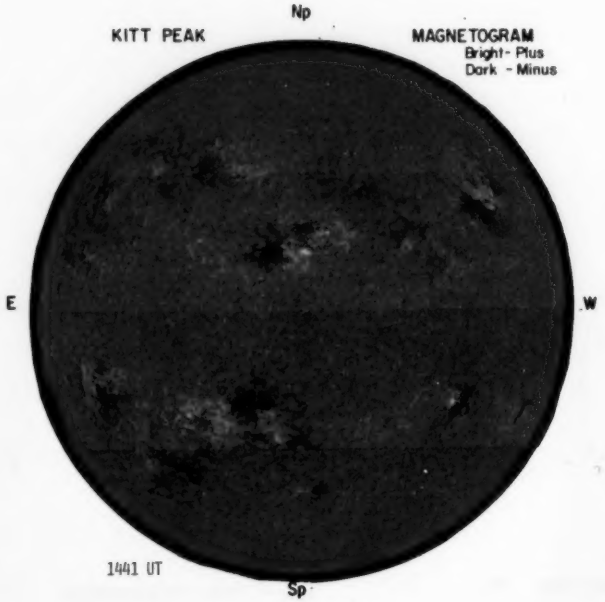


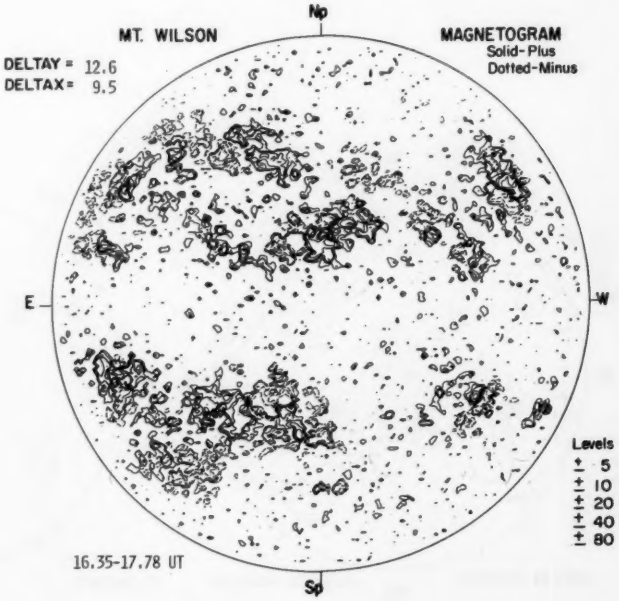
FAIR	M
10- 2800-3.0	
19- 3000-3.0	
20- 3500-3.5	
21- 0700-2.5	
25- 1200-2.5	

OCTOBER 28, 1978 (P = 25.19, B_o = 4.77, L_o = 219.39)

SACRAMENTO PEAK

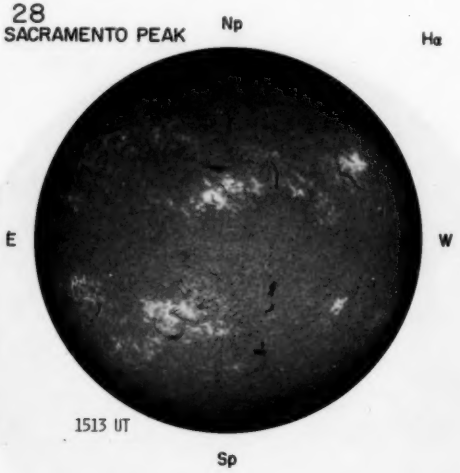




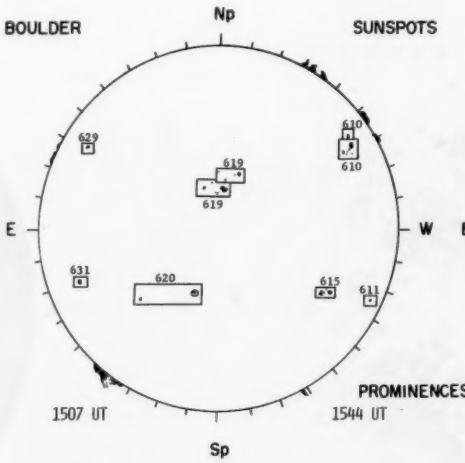


28

SACRAMENTO PEAK



Hα BOULDER



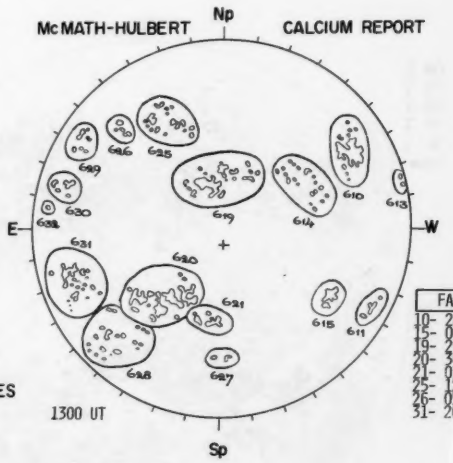
SUNSPOTS

PROMINENCES

1544 UT

McMATH-HULBERT

CALCIUM REPORT



FAIR	D
10-	2800-3.0
15-	0800-2.5
19-	2900-3.0
20-	3400-3.0
21-	0700-2.5
25-	1200-2.5
26-	0500-2.5
31-	2000-2.5

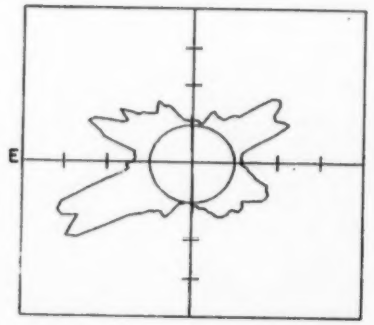
95
Oct 78

OCTOBER 29, 1978 (P = 25.05, B_o = 4.68, L_o = 206.21)

SACRAMENTO PEAK

Np

CORONA (1.15 $R_\odot$)
5303 Å



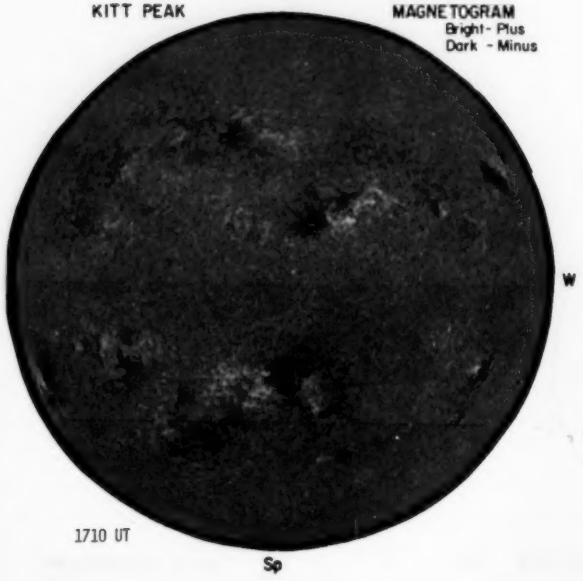
1443 UT

Sp

KITT PEAK

Np

MAGNETOGRAM
Bright - Plus
Dark - Minus



1710 UT

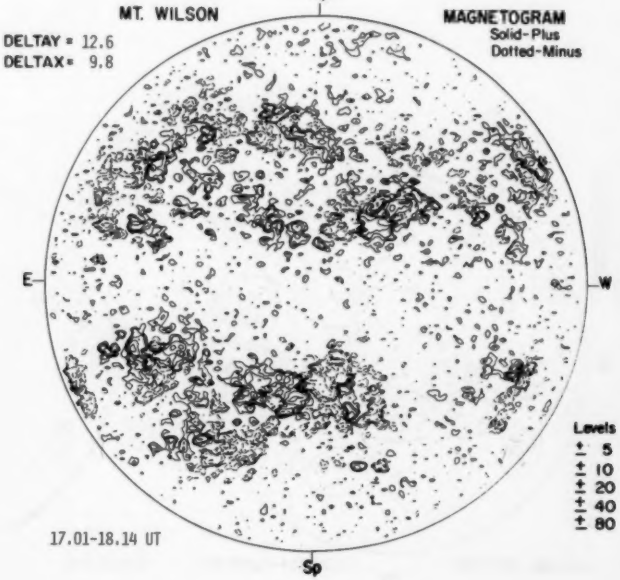
Sp

MT. WILSON

Np

DELTAY = 12.6
DELTAX = 9.8

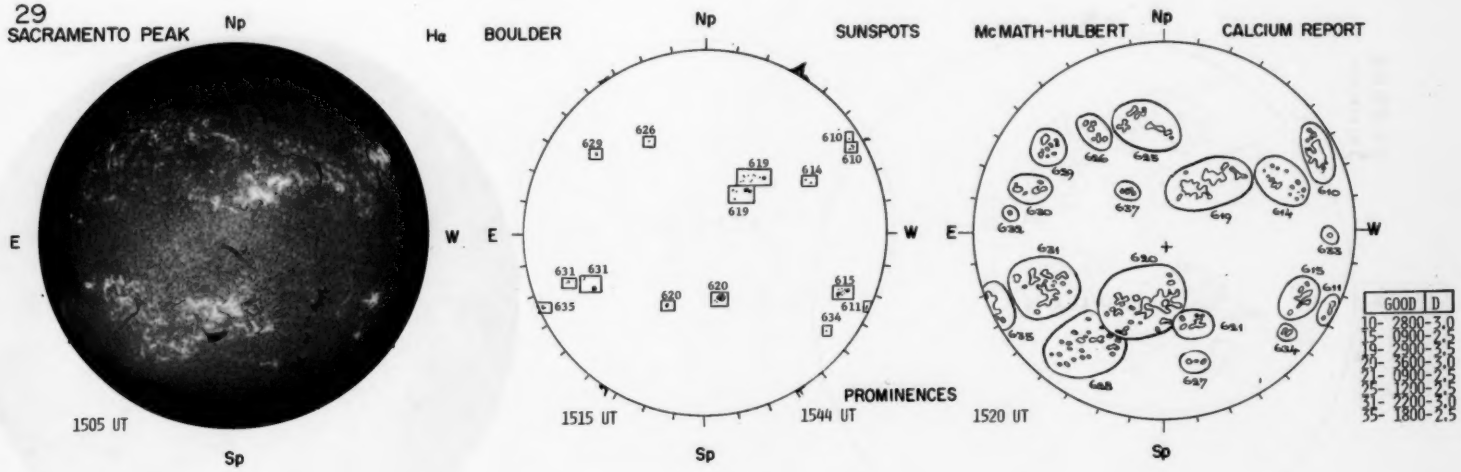
MAGNETOGRAM
Solid - Plus
Dotted - Minus



17.01-18.14 UT

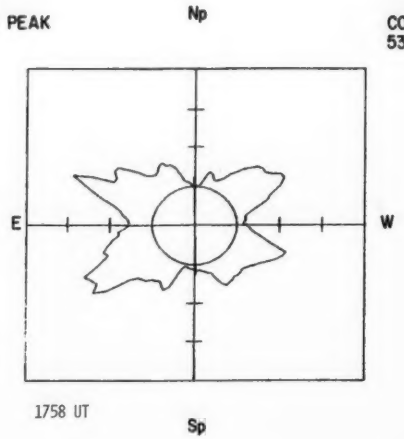
Sp

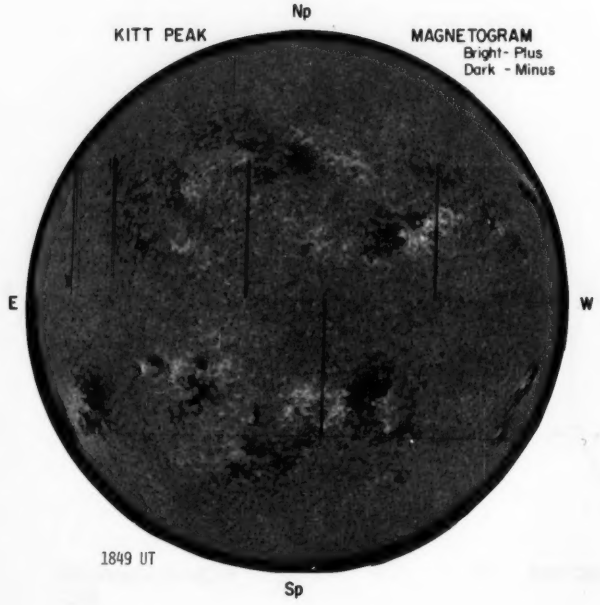
29

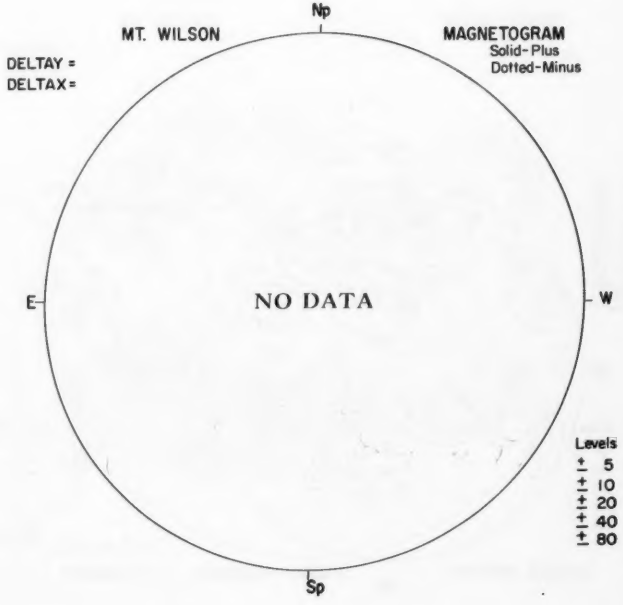

SACRAMENTO PEAK
Np
Hα
E
W
Sp
1505 UT
BOULDER
SUNSPOTS
PROMINENCES
1515 UT
1544 UT
McMATH-HULBERT
CALCIUM REPORT
1520 UT
GOOD
D
10- 2800-3.0
15- 0900-2.5
19- 2900-3.5
20- 3600-3.0
21- 0900-2.5
25- 1200-2.5
31- 2200-3.0
35- 1800-2.5

OCTOBER 30, 1978 (P = 24.91, B_0 = 4.58, L_0 = 193.02)

SACRAMENTO PEAK

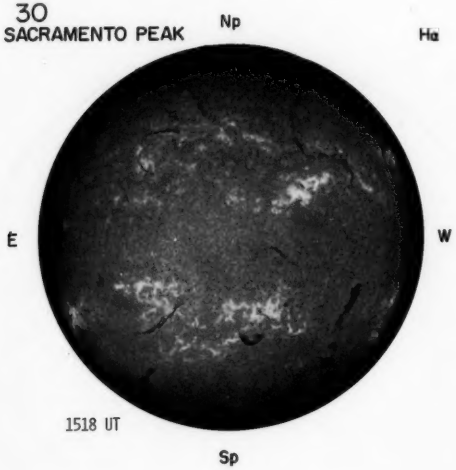




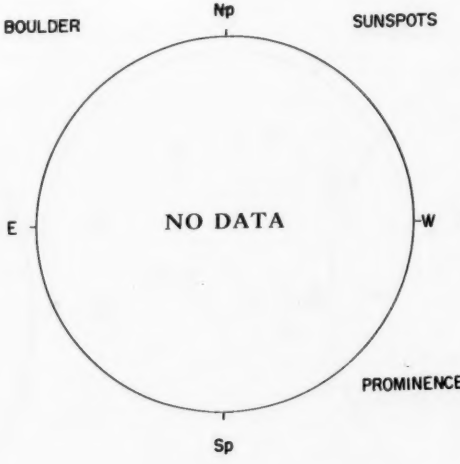


30

SACRAMENTO PEAK



Hα BOULDER

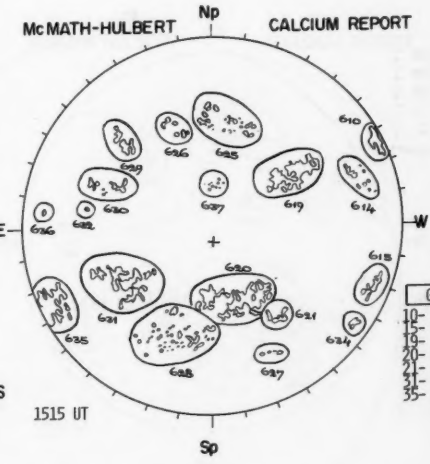


SUNSPOTS

PROMINENCES

McMATH-HULBERT

CALCIUM REPORT



GOOD	M
10-	2000-3.0
15-	1500-2.5
16-	3200-3.5
20-	4000-3.0
21-	0700-2.5
31-	2900-3.0
35-	4000-2.5

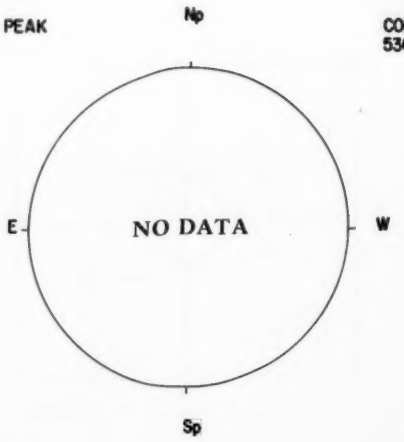
99

Oct 78

OCTOBER 31, 1978 (P = 24.75, B_o = 4.48, L_o = 179.83)

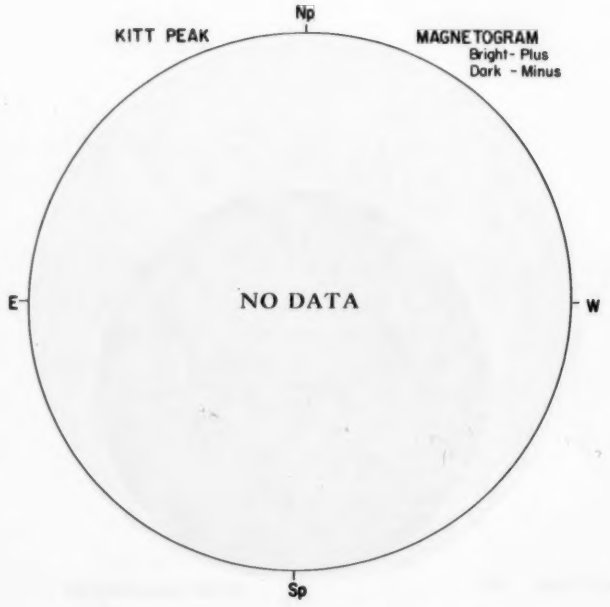
SACRAMENTO PEAK

CORONA (1.15 $R_\odot$)
5303 Å



KITT PEAK

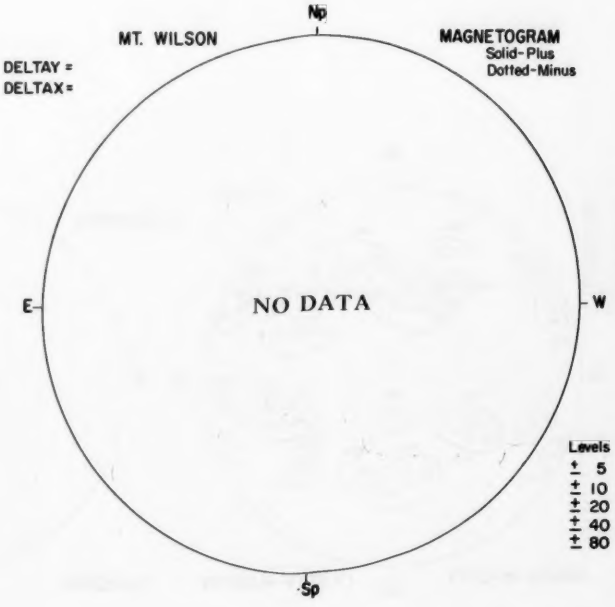
MAGNETOGRAM
Bright - Plus
Dark - Minus



MT. WILSON

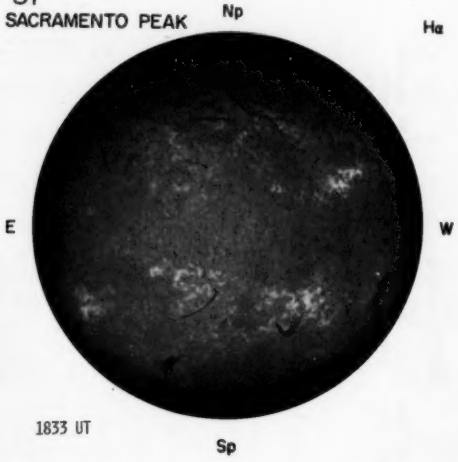
DELTAY =
DELTAX =

MAGNETOGRAM
Solid - Plus
Dotted - Minus



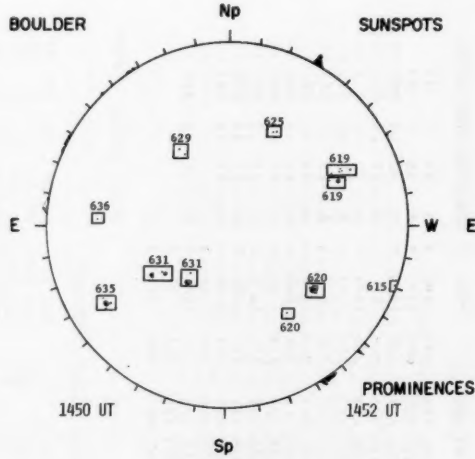
31

SACRAMENTO PEAK



1833 UT

Hα BOULDER



1450 UT

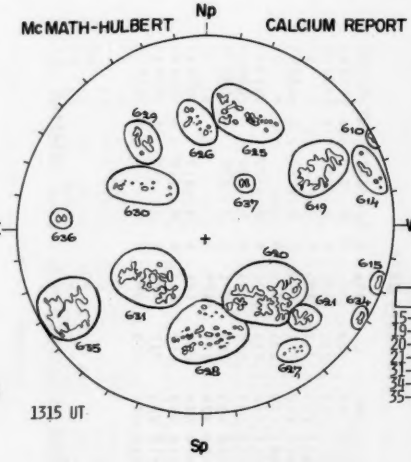
SUNSPOTS

PROMINENCES

1452 UT

McMATH-HULBERT

CALCIUM REPORT



1315 UT

FAIR	D
15- 0900	2.5
19- 3600	3.5
20- 4300	2.5
21- 0700	2.5
31- 2900	3.5
34- 0600	2.5
35- 4700	3.0

REGIONS OF SOLAR ACTIVITY

OCTOBER 1978

MCMATH REGION 15558 CMP DATE 1.0 — RETURN OF PART OF REGION 15508 — ROTATION 2

CALCIUM PLAGE DATA

YR	MO	DA	MC NO.	LAT	CMD	L	AREA	INT
78	9	24	15558	N17	E88	226	800	2.0
78	9	25	15558	N17	E76	225	1700	3.0
78	9	26	15558	N17	E60	228	1200	3.0
78	9	27	15558	N19	E44	229	1200	2.5
78	9	28	15558	N18	E31	230	1100	2.5
78	9	29	15558	N18	E19	230	1000	2.5
78	9	30	15558	N18	E05	229	1000	2.5
78	10	1	15558	N18	W08	216	1000	3.0
78	10	2	15558	N18	W21	215	1100	3.0
78	10	3	15558					
78	10	4	15558	N18	W47	216	1200	3.0
78	10	5	15558	N18	W64	219	1200	2.5
78	10	6	15558	N17	W77	218	700	2.5
78	10	7	15558	N17	W86	213	300	1.0

SUNSPOT DATA

NW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
20225	N18	E85	228	AP	3	B	170	1	HSX
20225	N18	E69	231	(AP)	4	B	210	1	HSX
20225	N17	E55	341	(AP)	5				
20225	N17	E42	231	(AP)	5	B	160	6	CAO
20225	N17	E29	231	(AP)	5				
20225	N17	E16	231	(AP)	5	H	20	2	HSX
20225	N18	E03	231	(AP)	5	R	120	4	CSO
20225	N18	W10	217	(BP)	4	B	170	4	CAO
20225	N18	W24	217	(AP)	4				
20225	N19	W38	218	(AP)	4	B	110	2	HSX
20225	N18	W50	217	(AP)	4	H	110	5	CAO
20225	N18	W63	217	(AP)	4	B	80	1	HSX
20225	N18	W77	218	(AP)	3	H	60	1	HSX

MCMATH REGION 15557 CMP DATE 1.7 — RETURN OF REGION 15522 — ROTATION 2

CALCIUM PLAGE DATA

YR	MO	DA	MC NO.	LAT	CMD	L	AREA	INT
78	9	23	15557	N35	E89	238	700	1.0
78	9	24	15557	N38	E80	234	1000	3.0
78	9	25	15557	N38	E78	223	2000	3.5
78	9	26	15557	N38	E66	222	2800	3.5
78	9		15557					
78	9	27	15557	N39	E54	219	3500	3.5
78	9		15557					
78	9	28	15557	N39	E38	223	3500	3.5
78	9		15557					
78	9	29	15557	N39	E27	221	3600	3.5
78	9		15557					
78	9	30	15557	N39	E15	219	3500	3.0
78	9		15557					
78	10	1	15557	N39	E02	206	3500	3.0
78	10	2	15557	N40	W10	204	3200	3.0
78	10	3	15557					
78	10	4	15557	N39	W34	203	3000	3.0
78	10		15557					
78	10	5	15557	N39	W47	202	3000	3.5
78	10	6	15557	N39	W60	201	3000	2.0
78	10	7	15557	N39	W70	197	2200	2.0
78	10	8	15557	N39	W80	195	1200	1.0
78	10	9	15557	N39	W85	187	400	1.0

SUNSPOT DATA

NW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
20224	N36	E80	233	AP	2	B	70	1	HAX
20224	N36	E65	235	(AP)	5	B	20	2	CSO
20224	N35	E51	235	(AP)	5	B	30	1	HSX
20230	N39	E70	216	AF	1	B	20	3	BXO
20224	N36	E39	234	(AP)	5	B	20	7	CSO
20230	N39	E53	220	(BF)	4	B	30	10	DSI
20224	N35	E27	233	(AP)	4	B	20	3	CAO
20230	N39	E42	218	(BF)	4	B	160	14	DAI
20224	N35	E13	234	(AP)	4	H	20	2	HSX
20230	N39	E29	218	(B)	4	H	30	10	DRO
20224	N36	E00	234	(AP)	3	R	20	2	BXO
20230	N39	E15	219	(B)	4	R	80	18	DRO
20230	N39	E02	205	(B)	3	B	50	10	CAI
20230	N39	W10	203	(B)	3				
20230	N40	W18	198	(AF)	2	B	10	4	BXO
20230	N39	W36	203	(B)	2				
20241	N43	W25	192	(AF)	1				

MCMATH REGION 15585 CMP DATE 1.9

CALCIUM PLAGE DATA

YR	MO	DA	MC NO.	LAT	CMD	L	AREA	INT
78	10	6	15585	N13	W62	203	400	2.5
78	10	7	15585	N13	W73	200	400	2.0

SUNSPOT DATA

NW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
20245	N15	W61	202	(B)	3	H	100	1	HSX
	N13	W73				B	10	1	AXX

MCMATH REGION 15565 CMP DATE 2.7 — RETURN OF REGION 15512 — ROTATION 5

CALCIUM PLAGE DATA

YR	MO	DA	MC NO.	LAT	CMD	L	AREA	INT
78	9	26	15565	N16	E83	205	400	1.0
78	9	27	15565	N18	E70	203	500	1.0
78	9	28	15565	N17	E56	205	400	1.0
78	9	29	15565	N17	E42	206	400	1.5
78	9	30	15565	N17	E30	204	300	1.0
78	10	1	15565	N17	E14	194	200	1.0
78	10	2	15565	N18	E02	192	400	1.5

SUNSPOT DATA

NW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS

MCMATH REGION 15571 CMP DATE 3.1

CALCIUM PLAGE DATA

YR	MO	DA	MC NO.	LAT	CMD	L	AREA	INT
78	9	30	15571	S11	E33	201	100	1.5

SUNSPOT DATA

NW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
	S14	E32				R	10	1	AXX

REGIONS OF SOLAR ACTIVITY

OCTOBER 1978

MCMATH REGION 15564 CMP DATE 3.4 RETURN OF REGIONS 15509 AND 15526 ROTATIONS 3 AND 2

				CALCIUM PLAGE DATA					SUNSPOT DATA							
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
78	9	26	15564	S27 E85	203	900	2.0	21231	S22 E72	214	AP	2	B	120	4	CSO
78	9	27	15564	S27 E77	196	1500	3.0	20231	S22 E60	213	(AP)	4	B	80	7	DAO
78	9	28	15564	S26 E59	202	2900	3.0	20231	S22 E47	213	(AP)	4	B	100	5	DAI
78	9	29	15564	S26 E47	201	4000	3.0	20231	S22 E33	214	(AP)	4	H	40	4	DRO
78	9	30	15564	S26 E37	197	3600	2.5	20231	S22 E20	214	(BP)	3	R	30	12	BXO
78	10	1	15564	S28 E25	183	3900	2.5	20231	S22 E08	199	(AP)	2	B	20	8	BXO
78	10	2	15564	S27 E11	183	4200	3.0	20231	S23 W05	198	(AP)	2				
78	10		15564					20238	S18 E06	187	(B)	4				
78	10	3	15564					20231	S23 W18	198	(AP)	3	B	40	5	CAO
78	10		15564					20238	S18 W08	188	(B)	2	B	10	3	CRO
78	10	4	15564	S28 W14	183	4000	2.5	20231	S22 W32	199	(AP)	2				
78	10		15564					20238	S16 W22	189	(AP)	1				
78	10	5	15564	S28 W29	184	4000	2.0									
78	10	6	15564	S28 W41	182	4000	2.0									
78	10	7	15564	S28 W50	177	3500	2.0									
78	10	8	15564	S28 W62	177	2000	1.5									
78	10	9	15564	S30 W73	175	1400	1.5									
78	10	10	15564	S30 W80	169	800	1.0									

MCMATH REGION 15566 CMP DATE 4.4 RETURN OF PART OF REGION 15518 ROTATION 3

				CALCIUM PLAGE DATA					SUNSPOT DATA							
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
78	9	28	15566	S17 E80	181	700	1.5	20233	S17 E72	188	AP	1	B	10	1	AXX
78	9	29	15566	S19 E65	183	1300	2.5	20233	S17 E62	185	(BP	2	H	10	1	AXX
78	9	30	15566	S18 E52	182	1100	2.5									
78	10	1	15566	S19 E38	170	1100	2.5									
78	10	2	15566	S18 E25	169	1100	2.5									
78	10	4	15566	S19 W01	170	800	2.0									
78	10	5	15566	S19 W16	171	800	2.0									
78	10	6	15566	S20 W29	170	700	2.0									
78	10	7	15566	S20 W40	167	700	2.0									
78	10	8	15566	S20 W52	167	700	2.0									
78	10	9	15566	S20 W65	167	700	2.0									
78	10	10	15566	S19 W78	167	400	1.0									

MCMATH REGION 15576 CMP DATE 4.5

				CALCIUM PLAGE DATA					SUNSPOT DATA							
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
78	10	4	15576	N30 E00	169	500	3.0	20242	N31 W01	168	(BP)	4	H	40	6	DRO
78	10	5	15576	N31 W12	167	800	2.5	20242	N30 W13	167	(B)	4	B	60	7	DSO
78	10	6	15576	N30 W26	167	800	2.5	20242	N30 W29	170	(B)	2	H	50	7	BXO
78	10	7	15576	N30 W39	166	600	2.5									
78	10	8	15576	N30 W52	167	600	2.5									
78	10	9	15576	N30 W64	166	600	2.5									
78	10	10	15576	N30 W80	169	300	2.0									

MCMATH REGION 15574 CMP DATE 5.0

				CALCIUM PLAGE DATA					SUNSPOT DATA							
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
78	10	2	15574	N18 E33	161	200	1.5									

MCMATH REGION 15577 CMP DATE 5.4

				CALCIUM PLAGE DATA					SUNSPOT DATA							
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
78	10	3	15577					20239	N31 E22	158	(AP)	1				
78	10	4	15577	N30 E11	158	300	1.5	20239	N30 E08	159	(B)	3				
78	10	5	15577	N31 W02	157	200	1.0									
78	10	6	15577	N30 W16	157	200	1.0		N30 W16				H	60	5	DAO
78	10	7	15577	N30 W29	156	200	2.0		N29 W28				B	0	2	BXO
78	10	8	15577	N30 W42	157	200	1.5									
78	10	9	15577	N30 W55	157	300	2.5		N29 W52				B	0	1	AXX
78	10	10	15577	N28 W69	158	500	2.5	20254	N29 W67	155	(B)	4	B	390	5	DSO
78	10	11	15577	N30 W80	156	600	3.0	20254	N29 W82	157	AF	4	B	100	10	HSX

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MCMATH REGION 15570 CMP DATE 5.6 RETURN OF REGION 15521 ROTATION 2

				CALCIUM	PLAGE	DATA			SUNSPOT	DATA						
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
78	9	29	15570	S14 E85	163	1800	3.0	20234	S14 E79	168	AP	3				
78	9	30	15570	S14 E70	164	1500	3.5	20234	S14 E66	168	(AP)	3	R	200	8	DAO
78	10	1	15570	S14 E56	152	2800	4.0	20234	S14 E52	155	(BP)	4	B	220	13	DAI
78	10	2	15570	S14 E43	151	3000	3.5	20234	S13 E38	155	(BP)	4				
78	10	3	15570					20234	S12 E23	157	(Y)	4	B	130	24	DAI
78	10	4	15570	S14 E15	154	2800	3.5	20234	S13 E10	157	(Y)	5	M	180	27	DAI
78	10	5	15570	S14 E00	155	2800	3.5	20234	S14 W04	158	(YD)	5	B	180	21	DHI
78	10	6	15570	S14 W14	155	3200	3.0	20234	S13 W17	158	(YD)	5	M	220	18	DAI
78	10	7	15570	S14 W27	154	3000	3.0	20234	S13 W29	157	(YD)	5	B	350	25	DAI
78	10	8	15570	S14 W40	155	3000	3.0	20234	S13 W43	157	(YD)	5	B	610	24	DAI
78	10	9	15570	S14 W54	156	3200	3.0	20234	S13 W54	154	(YD)	4	B	690	15	DAI
78	10	10	15570	S14 W68	157	3200	3.0	20234	S13 W70	158	(AP)	5	B	450	10	DAI
78	10	11	15570	S14 W82	158	3000	3.0		S13 W85				B	140	2	HAX

MCMATH REGION 15578 CMP DATE 6.4

				CALCIUM	PLAGE	DATA			SUNSPOT	DATA						
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
78	10	03	15578					20240	N27 E38	142	(AF)	2	B	10	2	AXX
78	10	4	15578	N28 E25	144	300	1.5									
78	10	5	15578	N28 E11	144	300	1.0									
78	10	6	15578	N28 W03	144	200	1.0									
78	10	7	15578	N28 W15	142	300	1.0									
78	10	8	15578	N28 W27	142	300	1.0									

MCMATH REGION 15569 CMP DATE 6.6

				CALCIUM	PLAGE	DATA			SUNSPOT	DATA						
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
78	9	29	15569	N14 E88	160	300	2.0									
78	9	30	15569	N15 E76	158	900	3.5	20235	N14 E72	162	(AP)	3	R	20	2	BXO
78	10	1	15569	N15 E63	145	1200	3.5	20235	N15 E60	147	(B)	3	B	80	6	CRO
78	10	2	15569	N16 E50	144	1700	3.5	20235	N15 E44	149	(B)	3				
78	10	3	15569					20235	N16 E39	141	(AF)	2	B	10	3	CRO
78	10	4	15569	N17 E26	143	1500	3.0	20235	N15 E31	136	(B)	2	M	30	7	CRO
78	10	5	15569	N16 E13	142	1600	2.5	20235	N14 E18	136	(B)	4	B	20	2	HRX
78	10	6	15569	N16 W02	143	1600	2.5	20235	N14 E05	136	(B)	3	M	20	1	HRX
78	10	7	15569	N16 W15	142	1600	2.5	20235	N13 W12	140	(AP)	3	B	10	5	BXO
78	10	8	15569	N16 W28	135	1500	2.5	20235	N15 W27	141	(B)	2	B	10	1	AXX
78	10	9	15569	N16 W42	144	1500	2.0									
78	10	10	15569	N16 W56	145	1500	2.0									
78	10	11	15569	N16 W70	146	1200	2.0									
78	10	12	15569	N16 W80	142	800	1.0									

MCMATH REGION 15581 CMP DATE 6.8

				CALCIUM	PLAGE	DATA			SUNSPOT	DATA						
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
78	10	4	15581	S20 E30	139	100	2.0									

MCMATH REGION 15582 CMP DATE 8.6

				CALCIUM	PLAGE	DATA			SUNSPOT	DATA						
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
78	10	4	15582	S21 E55	114	300	2.0	20243	S22 E51	116	(AP)	1				
78	10	5	15582	S22 E40	115	500	2.0									
78	10	6	15582	S22 E26	115	300	1.5									
78	10	7	15582	S22 E13	114	300	1.5									
78	10	8	15582	S23 E00	115	500	2.0	20250	S23 W04	118	(BP)	3	B	10	10	BXO
78	10	9	15582	S23 W16	118	1200	2.5	20250	S24 W20	120	(B)	3	B	70	22	DAI
78	10	10	15582	S23 W29	118	1600	2.5	20250	S24 W31	119	(BY)	6	B	80	17	DAI
78	10	11	15582	S23 W43	119	2100	3.5	20250	S24 W45	120	(BY)	5	B	330	21	DAI
78	10	12	15582	S24 W57	119	2800	3.5	20250	S23 W57	118	(BY)	5				
78	10	13	15582	S24 W71	119	2800	3.5	20250	S23 W70	118	(B)	6	M	670	12	EAI
78	10	14	15582	S23 W82	117	2600	3.0	20250	S24 W80	115	B	5				

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MCMATH REGION 15594 CMP DATE 9.3

				CALCIUM PLAGE DATA				SUNSPOT DATA								
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
78	10	12	15594	N34 W44	106	200	1.5									

MCMATH REGION 15588 CMP DATE 9.4

				CALCIUM PLAGE DATA				SUNSPOT DATA								
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
78	10	7	15588	N22 E23	104	500	2.5	20247	N22 E25	103	(B)	4	B	30	7	BXO
78	10	8	15588	N22 E11	104	500	2.5	20247	N22 E12	102	(B)	4	B	40	9	DAO
78	10	9	15588	N23 E00	102	800	2.5	20247	N22 W03	103	(B)	4	B	20	8	DSO
78	10	10	15588	N23 W13	102	800	2.0	20247	N22 W14	102	(B)	4				
78	10	11	15588	N23 W27	103	800	3.0	20247	N23 W27	102	(B)	3	B	60	6	DAO
78	10	12	15588	N23 W41	103	1100	3.0	20247	N22 W45	106	(AP)	4	H	30	6	CRO
78	10	13	15588	N23 W56	104	1100	2.5	20247	N21 W58	106	(AP)	3	H	20	1	HRX
78	10	14	15588	N23 W70	105	800	2.5		N23 W65				H	10	1	AXX
78	10	15	15588	N23 W83	105	600	2.0									

MCMATH REGION 15580 CMP DATE 10.7 RETURN OF REGION 15525 ROTATION 2

				CALCIUM PLAGE DATA				SUNSPOT DATA								
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
78	10	4	15580	N34 E82	87	400	1.5									
78	10	5	15580	N34 E66	89	500	1.5									
78	10	6	15580	N34 E52	89	600	1.5									
78	10	7	15580	N34 E40	87	800	2.0									
78	10	8	15580	N34 E28	87	800	2.0									
78	10	9	15580	N34 E15	87	1000	2.0		N37 E14				B	10	2	BXO
78	10	10	15580	N34 E02	87	1200	2.0									
78	10	11	15580	N34 W08	84	1200	2.0									
78	10	12	15580	N34 W22	84	1000	1.5									
78	10	13	15580	N34 W36	84	700	1.5									
78	10	14	15580	N34 W50	85	700	1.5									
78	10	15	15580	N34 W65	87	700	3.0	20264	N36 W66	84	X	2	H	20	4	BXO
78	10	16	15580	N34 W77	86	700	2.5	20264	N36 W72	81	(AP)	1				
78	10	17	15580	N34 W89	85	700	2.5									

MCMATH REGION 15599 CMP DATE 11.4

				CALCIUM PLAGE DATA				SUNSPOT DATA								
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
78	10	14	15599	S21 W43	78	600	2.5	20261	S20 W43	78	(B)	4	H	20	2	CRO
78	10	15	15599	S21 W56	78	700	3.0	20261	S20 W62	80	AP	4	H	10	1	AXX
78	10	16	15599	S20 W69	78	600	2.5									
78	10	17	15599	S21 W82	78	500	1.5									

MCMATH REGION 15583 CMP DATE 12.2 RETURN OF REGION 15530 ROTATION 2

				CALCIUM PLAGE DATA				SUNSPOT DATA								
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
78	10	5	15583	N18 E88	67	900	1.5	20244	N16 E85	69	AP	3	B	0	1	HSX
78	10	6	15583	N18 E75	66	1500	3.0	20244	N16 E72	69	(AP)	3	H	100	1	HSX
78	10	7	15583	N20 E62	65	1300	2.5	20244	N17 E59	69	(AP)	3	B	90	1	HSX
78	10	8	15583	N20 E48	67	1300	2.0	20244	N17 E46	68	(AP)	4	B	70	1	HSX
78	10	9	15583	N19 E34	68	1500	1.5	20244	N17 E32	68	(AP)	3	B	60	1	HSX
78	10	10	15583	N19 E20	69	1500	1.5	20244	N17 E20	68	(Y)	5	B	60	4	CSO
78	10	11	15583	N20 E08	68	1400	2.0	20244	N17 E07	68	(AP)	5	B	50	1	HSX
78	10	12	15583	N20 W05	67	1400	2.0	20244	N17 W07	68	(AP)	6				
78	10	13	15583	N20 W19	67	1200	2.5	20244	N17 W20	68	(YD)	5	H	100	12	DAO
78	10	14	15583	N20 W33	68	1500	2.0	20244	N17 W33	68	(Y)	5	H	120	9	DAO
78	10	15	15583	N20 W46	68	1800	2.5	20244	N17 W51	69	Y	5				
78	10	16	15583	N19 W59	68	1800	2.0	20244	N17 W60	69	(BF)	4				
78	10	17	15583	N19 W70	66	1500	2.0									
78	10	18	15583	N19 W83	66	800	1.0									

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MCMATH REGION 15586 CMP DATE 12.2

CALCIUM PLAGE DATA

YR	MO	DA	MC NO.	LAT	CMD	L	AREA	INT
78	10	6	15586	S30	E75	66	300	2.5
78	10	7	15586	S29	E61	66	400	2.0
78	10	8	15586	S29	E47	68	500	2.5
78	10	9	15586	S29	E33	69	600	2.5
78	10	10	15586	S29	E19	70	500	2.0
78	10	11	15586	S30	E08	68	300	2.0
78	10	12	15586	S30	W05	67	300	2.0
78	10	13	15586	S31	W18	66	300	2.0
78	10	14	15586	S31	W31	66	400	1.5
78	10	15	15586	S31	W44	66	300	1.0
78	10	16	15586	S31	W55	64	300	1.0
78	10	17	15586	S32	W67	63	300	1.0

SUNSPOT DATA

MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
	S32	E65				M	50	1	HRX
20248	S30	E54	74	(AP)	2	B	10	1	AXX
20248	S30	E46	68	(B)	3	B	10	4	BXO

MCMATH REGION 15587 CMP DATE 13.3 RETURN OF REGIONS 15533 AND 15539 ROTATIONS 3 AND 2

CALCIUM PLAGE DATA

YR	MO	DA	MC NO.	LAT	CMD	L	AREA	INT
78	10	6	15587	S18	E81	60	1800	3.0
78	10	7	15587	S18	E69	58	2600	3.0
78	10		15587					
78	10	8	15587	S18	E56	59	3600	3.0
78	10		15587					
78	10		15587					
78	10	9	15587	S18	E44	58	3500	3.0
78	10		15587					
78	10		15587					
78	10	10	15587	S18	E33	56	3800	3.0
78	10		15587					
78	10		15587					
78	10	11	15587	S18	E21	55	4800	3.5
78	10		15587					
78	10		15587					
78	10	12	15587	S18	E10	52	4700	3.5
78	10		15587					
78	10		15587					
78	10	13	15587	S19	W04	52	4400	3.0
78	10		15587					
78	10		15587					
78	10	14	15587	S19	W17	52	4400	3.0
78	10		15587					
78	10		15587					
78	10	15	15587	S20	W31	53	4700	3.0
78	10		15587					
78	10		15587					
78	10	16	15587	S20	W43	52	5000	3.0
78	10		15587					
78	10		15587					
78	10	17	15587	S20	W55	51	5600	3.0
78	10	18	15587	S20	W70	53	5400	3.0
78	10	19	15587	S20	W85	53	3800	2.0
78	10	20	15587	S20	W89	47	400	1.5

SUNSPOT DATA

MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
20246	S20	E78	63	(AP)	2	M	220	6	DAO
20246	S19	E66	62	(AP)	2	B	80	2	CSO
20249	S17	E66	62	(B)	2	B	40	2	DSO
20246	S19	E53	61	(AP)	3	B	50	3	CSO
20249	S16	E58	56	(B)	2	B	20	3	CSO
20251	S16	E48	56	(B)	3	B	30	8	DSO
20246	S19	E38	62	(AP)	3	B	60	3	CSO
20249	S16	E44	56	(B)	2	B	10	3	BXO
20251	S15	E33	67	(B)	3	B	0	1	AXX
20246	S20	E26	62	(AF)	4				
20251	S16	E21	67	(B)	3				
20255	S24	E37	51	(B)	3				
20246	S20	E11	64	(AP)	5	B	60	5	CSO
20255	S24	E24	51	(B)	4	B	50	4	DAO
20257	S20	E32	43	(B)	4	B	60	7	DAO
20246	S20	W03	64	(AP)	5				
20255	S25	E11	50	(B)	3				
20257	S19	E19	42	(Y)	4	M	1140	11	DXX
20246	S21	W15	63	(AP)	5	M	20	2	CRO
20255	S25	W03	51	(AP)	3	M	60	1	HSX
20257	S19	E05	43	(YD)	4	M	160	12	DAI
20246	S20	W29	64	(AP)	5	M	70	1	HSX
20255	S25	W15	50	(B)	3	M	20	7	DSO
20257	S19	W12	47	(BY)	5	M	190	25	EAI
20246	S20	W45	63	AP	5				
20255	S25	W31	49	B	2	M	40	6	DAO
20257	S20	W28	46	B	6				
20246	S20	W55	64	(AP)	3				
20255	S25	W40	49	(AF)	3				
20257	S20	W39	48	(B)	4				

MCMATH REGION 15589 CMP DATE 14.6 RETURN OF REGION 15535 ROTATION 2

CALCIUM PLAGE DATA

YR	MO	DA	MC NO.	LAT	CMD	L	AREA	INT
78	10	8	15589	N22	E78	37	500	2.5
78	10	9	15589	N22	E67	35	900	3.0
78	10	10	15589	N22	E53	36	800	3.0
78	10	11	15589	N22	E40	36	900	3.0
78	10	12	15589	N22	E26	36	1000	2.5
78	10	13	15589	N21	E12	36	1000	2.5
78	10	14	15589	N22	W03	38	1200	2.0
78	10	15	15589	N22	W17	39	1600	2.5
78	10	16	15589	N22	W30	39	1700	2.5
78	10	17	15589	N21	W42	38	2000	2.5
78	10	18	15589	N21	W56	39	2700	3.0
78	10	19	15589	N20	W71	39	3000	3.0
78	10	20	15589	N20	W88	38	2700	3.0

SUNSPOT DATA

MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
	N21	E79				B	10	2	AXX
	N22	E65				B	10	7	BXO
20256	N21	E51	37	(B)	3				
20256	N21	E37	38	(B)	4	B	80	12	DSI
20256	N21	E25	36	(B)	5	M	40	8	DSO
20256	N20	E12	36	(B)	4	M	60	16	DAO
20256	N19	W05	40	(AP)	5	M	60	7	CSO
20256	N20	W21	39	B	4	M	3300	11	DXX
20256	N20	W30	39	(B)	3				

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MCMATH REGION 15591 CMP DATE 16.3

CALCIUM PLAGE DATA

YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT
78	10	9	15591	S17 E85	17	1100	2.5
78	10	10	15591	S20 E72	17	2200	3.0
78	10	11	15591	S20 E60	16	3500	3.0
78	10		15591				
78	10		15591				
78	10	12	15591	S22 E48	14	3800	3.0
78	10		15591				
78	10	13	15591	S22 E33	15	3500	2.5
78	10		15591				
78	10	14	15591	S22 E20	15	3500	3.0
78	10		15591				
78	10	15	15591	S22 E09	13	3600	3.5
78	10		15591				
78	10	16	15591	S22 W01	10	3500	3.5
78	10		15591				
78	10	17	15591	S22 W15	11	3800	3.5
78	10	18	15591	S22 W29	12	3900	3.5
78	10	19	15591	S22 W45	13	4200	3.5
78	10	20	15591	S22 W54	12	3900	3.5
78	10	21	15591	S22 W65	10	4000	3.5
78	10	22	15591	S23 W77	7	2800	2.5

SUNSPOT DATA

MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
20252	S17 E75	25	(B)	3	B	90	6	DSO
20252	S17 E62	26	(AP)	5				
20252	S17 E50	25	(AP)	4	B	250	10	DAI
20258	S22 E71	4	AP	4	B	80	1	HSX
	S23 E63				B	40	1	HSX
20252	S18 E36	25	(B)	5	H	50	4	CAO
20258	S21 E57	4	(AP)	4				
20252	S18 E28	20	(B)	4	H	120	10	DAO
20258	S21 E40	8	(AP)	3	H	40	9	DRO
20252	S18 E12	23	(AP)	4	H	100	8	DAO
20258	S21 E29	6	(BP)	4	H	80	20	DSO
20252	S17 W06	24	AP	3	H	50	6	DAO
20258	S22 E13	5	B	6	H	90	27	DAO
20252	S18 W16	25	(AP)	1				
20258	S21 E02	7	(B)	4				
20258	S21 W65	9	(B)	5				

MCMATH REGION 15607 CMP DATE 16.5

CALCIUM PLAGE DATA

YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT
78	10	16	15607	N37 W02	11	200	1.5
78	10	17	15607	N37 W14	10	200	1.5
78	10	18	15607	N37 W28	11	200	1.0

SUNSPOT DATA

MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS

MCMATH REGION 15590 CMP DATE 16.7 RETURN OF REGION 15536 ROTATION 2

CALCIUM PLAGE DATA

YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT
78	10	9	15590	N30 E90	12	600	1.0
78	10	10	15590	N29 E83	6	1600	2.0
78	10	11	15590	N28 E68	8	1200	2.5
78	10	12	15590	N28 E55	7	1000	2.5
78	10	13	15590	N28 E40	8	900	2.0
78	10	14	15590	N28 E27	8	1200	1.5
78	10	15	15590	N28 E13	9	1200	2.0
78	10	16	15590	N28 E02	7	1200	2.0
78	10	17	15590	N28 W10	6	1200	2.0
78	10	18	15590	N28 W24	7	1000	2.0
78	10	19	15590	N28 W39	7	800	2.0
78	10	20	15590	N28 W48	6	1000	2.0
78	10	21	15590	N27 W62	7	1000	2.0
78	10	22	15590	N27 W75	5	1000	2.0

SUNSPOT DATA

MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
20253	N28 E89	11	AP	5				
20253	N28 E75	13	(AP)	5				
20253	N28 E63	12	(AP)	6	B	100	1	HHX
20253	N29 E50	11	(AP)	6				
20253	N29 E38	10	(AP)	5	H	100	1	HSX
20253	N29 E25	10	(AP)	6	H	90	1	HSX
20253	N29 E09	9	AP	6				
20253	N29 W01	10	(AP)	5				
20253	N30 W65	9	(AP)	4				

MCMATH REGION 15600 CMP DATE 16.9

CALCIUM PLAGE DATA

YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT
78	10	14	15600	N14 E32	3	300	2.5
78	10	15	15600	N14 E16	6	400	2.0
78	10	16	15600	N14 E03	6	400	2.0
78	10	17	15600	N14 W10	6	200	1.5
78	10	18	15600	N14 W24	7	200	1.5
78	10	19	15600	N14 W39	7	100	1.0
78	10	20	15600	N14 W49	7	100	1.0

SUNSPOT DATA

MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
20262	N13 E31	4	(B)	3	H	10	3	BXO
20262	N13 E12	6	B	3	H	20	3	CRO
20262	N13 E01	8	(AP)	3				

MCMATH REGION 15601 CMP DATE 18.0 RETURN OF REGION 15541 ROTATION 2

CALCIUM PLAGE DATA

YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT
78	10	13	15601	S31 E58	351	600	1.5
78	10	14	15601	S31 E44	352	600	1.5
78	10	15	15601	S31 E31	352	600	1.5
78	10	16	15601	S31 E20	350	600	1.5
78	10	17	15601	S31 E06	351	600	2.5

SUNSPOT DATA

MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS

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MCMATH REGION 15601 (CONT) CMP DATE 18.0 RETURN OF REGION 15541 ROTATION 2

				CALCIUM PLAGE DATA				SUNSPOT DATA							
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
78	10	18	15601	S31 W18	351	500	2.5									
78	10	19	15601	S31 W23	351	400	2.0									
78	10	20	15601	S32 W33	351	400	2.0									
78	10	21	15601	S32 W44	349	400	2.0									
78	10	22	15601	S32 W56	346	300	2.0									

MCMATH REGION 15592 CMP DATE 18.1 RETURN OF REGION 15543 ROTATION 2

				CALCIUM PLAGE DATA				SUNSPOT DATA							
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
78	10	10	15592	N38 E87	2	800	1.5									
78	10	11	15592	N38 E79	358	1500	1.5		N32 E82				B	20	2	BXO
78	10	12	15592	N37 E70	353	2500	2.5	20259	N32 E68	354	(AF)	4	H	10	1	AXX
78	10	13	15592	N36 E56	353	2300	2.0	20259	N32 E55	354	(B)	3	H	40	4	BXO
78	10	14	15592	N36 E44	352	2500	2.0									
78	10	15	15592	N36 E30	353	2500	2.5									
78	10	16	15592	N36 E19	351	2500	2.5									
78	10	17	15592	N36 E07	350	2500	2.5									
78	10	18	15592	N36 W07	350	2500	2.5									
78	10	19	15592	N36 W20	348	2700	2.0									
78	10	20	15592	N36 W29	347	2500	3.0									
78	10	21	15592	N36 W42	347	2500	2.0									
78	10	22	15592	N36 W56	346	2500	2.0									
78	10	24	15592	N35 W80	345	1400	2.0									
78	10	25	15592	N35 W90	342	600	1.0									

MCMATH REGION 15608 CMP DATE 18.6 RETURN OF REGION 15547 ROTATION 3

				CALCIUM PLAGE DATA				SUNSPOT DATA							
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
78	10	13	15608	N20 E66	343	200	1.0									
78	10	14	15608	N20 E53	343	200	1.0									
78	10	15	15608	N20 E40	343	200	1.0									
78	10	16	15608	N21 E28	342	200	1.0									
78	10	17	15608	N20 E14	343	200	1.0									
78	10	18	15608	N21 E00	343	200	1.0									
78	10	19	15608	N21 W15	343	200	1.0									
78	10	20	15608	N20 W25	343	300	1.0									

MCMATH REGION 15596 CMP DATE 19.0 RETURN OF REGION 15542 ROTATION 3

				CALCIUM PLAGE DATA				SUNSPOT DATA							
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
78	10	12	15596	S23 E90	333	300	1.0									
78	10	13	15596	S24 E74	335	300	1.0									
78	10	14	15596	S23 E57	339	400	1.5									
78	10	15	15596	S23 E43	340	500	1.5									
78	10	16	15596	S23 E31	339	400	1.0									
78	10	17	15596	S24 E19	338	400	1.5									
78	10	18	15596	S24 E05	338	200	1.5									
78	10	19	15596	S24 W11	339	200	1.5									
78	10	20	15596	S25 W20	338	200	1.5									
78	10	21	15596	S26 W33	338	200	1.5									
78	10	22	15596	S26 W46	336	300	1.5									
78	10	24	15596	S27 W72	337	300	1.0									

MCMATH REGION 15617 CMP DATE 19.0

				CALCIUM PLAGE DATA				SUNSPOT DATA							
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
78	10	21	15617	N14 W34	339	200	2.5	20266	N15 W34	338	(B)	3				
78	10	22	15617	N14 W48	338	300	2.5									
78	10	24	15617	N14 W74	339	300	1.5									

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MCMATH REGION 15606 CMP DATE 19.9

			CALCIUM PLAGE DATA					SUNSPOT DATA							
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
78	10	16	15606	S18 E45	325	100	1.5	20265	S19 E44	326	(AP)	1				
78	10	17	15606	S18 E32	325	100	1.0									
78	10	18	15606	S18 E18	325	100	1.5									
78	10	19	15606	S18 E02	326	100	1.0									
78	10	20	15606	S18 W08	326	300	1.0									
78	10	21	15606	S19 W22	327	300	1.5									
78	10	22	15606	S19 W36	326	300	1.5									
78	10	24	15606	S20 W62	327	400	1.5									
78	10	25	15606	S20 W75	327	300	1.0									

MCMATH REGION 15597 CMP DATE 20.2

			CALCIUM PLAGE DATA					SUNSPOT DATA							
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
78	10	12	15597	N18 E84	339	400	1.0									
78	10	13	15597	N17 E80	329	1500	2.0	20260	N17 E80	329	Y	5	M	70	1	HSX
78	10	14	15597	N18 E70	326	2000	3.0	20260	N17 E68	328	(BY)	5	M	60	5	DSO
78	10	15	15597	N18 E55	328	1900	3.0	20260	N17 E51	328	AP	4	M	80	7	DAO
78	10	16	15597	N18 E42	328	1900	3.0	20260	N16 E41	329	(AP)	4				
78	10	17	15597	N18 E31	326	1800	3.0									
78	10	18	15597	N19 E19	324	1500	2.5									
78	10	19	15597	N19 E05	323	1300	3.0									
78	10	20	15597	N19 W04	322	1500	3.0									
78	10	21	15597	N18 W19	324	1700	3.0	20260	N13 W25	329	(AP)	3				
78	10	22	15597	N18 W33	323	1800	2.5									
78	10	24	15597	N18 W59	324	1800	2.5									
78	10	25	15597	N18 W73	325	1800	2.5									
78	10	26	15597	N18 W85	322	800	1.0									

MCMATH REGION 15598 CMP DATE 20.7

			CALCIUM PLAGE DATA					SUNSPOT DATA							
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
78	10	13	15598	N31 E87	322	400	2.5		N25 E84				M	110	1	HSX
78	10	14	15598	N32 E82	314	1500	3.0	20263	N32 E76	320	(B)	5				
78	10	15	15598	N33 E65	318	2600	3.0	20263	N30 E60	319	BP	5	M	100	16	DAI
78	10	16	15598	N31 E53	317	2600	3.5	20263	N30 E50	320	(BP)	4				
78	10	17	15598	N30 E40	317	2200	3.0									
78	10	18	15598	N30 E26	317	1800	3.5									
78	10	19	15598	N30 E12	316	2000	3.0									
78	10	20	15598	N32 E02	316	2000	3.0									
78	10	21	15598	N31 W11	316	2000	3.0	20263	N31 W14	318	(AP)	6				
78	10	22	15598	N30 W24	314	1700	2.5									
78	10	24	15598	N30 W50	315	1700	2.5									
78	10	25	15598	N30 W63	315	1700	2.5									
78	10	26	15598	N32 W75	312	1400	1.5	20263	N31 W75	313	(AP)	2				
78	10	27	15598	N31 W88	313	500	1.0									

MCMATH REGION 15609 CMP DATE 20.9

			CALCIUM PLAGE DATA					SUNSPOT DATA							
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
78	10	17	15609	N12 E43	314	100	1.5									
78	10	18	15609	N12 E30	313	100	1.0									

MCMATH REGION 15603 CMP DATE 21.3 RETURN OF REGION 15549 ROTATION 2

			CALCIUM PLAGE DATA					SUNSPOT DATA							
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
78	10	14	15603	S14 E87	309	800	1.0									
78	10	15	15603	S15 E70	313	2000	2.5									
78	10	16	15603	S16 E58	312	1600	2.0									
78	10	17	15603	S16 E45	312	1600	2.0									
78	10	18	15603	S16 E32	311	1300	2.0									
78	10	19	15603	S16 E18	310	1300	2.0									
78	10	20	15603	S16 E10	308	1300	2.0									
78	10	21	15603	S16 W06	311	1300	2.0	20267	S16 W03	307	(B)	3				
78	10	22	15603	S16 W19	309	1200	2.0									
78	10	24	15603	S16 W45	310	1200	2.0									
78	10	25	15603	S16 W59	311	1200	2.0									

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MCMATH REGION 15603 (CONT) CMP DATE 21.3 RETURN OF REGION 15549 ROTATION 2

			CALCIUM PLAGE DATA					SUNSPOT DATA						
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H STA	AREA	CNT CLASS
78	10	26	15603	S17 W68	305	400	1.5							
78	10	27	15603	S17 W81	306	200	1.0							

MCMATH REGION 15604 CMP DATE 21.3

			CALCIUM PLAGE DATA					SUNSPOT DATA						
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H STA	AREA	CNT CLASS
78	10	15	15604	S27 E73	310	700	2.5							
78	10	16	15604	S27 E60	310	1000	2.5							
78	10	17	15604	S27 E48	309	1100	2.5							
78	10	18	15604	S27 E35	308	1100	3.0							
78	10	19	15604	S27 E19	309	1200	3.5							
78	10	20	15604	S27 E10	308	1200	3.0							
78	10	21	15604	S27 W04	309	1400	3.5	20268	S27 W06	310	(B)	3		
78	10	22	15604	S27 W17	307	1400	3.0							
78	10	24	15604	S28 W43	308	1700	3.0							
78	10	25	15604	S28 W56	308	1700	3.0							
78	10	26	15604	S28 W69	306	1500	3.0							
78	10	27	15604	S28 W83	308	400	1.5							

MCMATH REGION 15605 CMP DATE 21.6 RETURN OF REGION 15546 ROTATION 3

			CALCIUM PLAGE DATA					SUNSPOT DATA						
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H STA	AREA	CNT CLASS
78	10	15	15605	N23 E76	307	800	1.5							
78	10	16	15605	N23 E66	304	1000	1.5							
78	10	17	15605	N23 E54	303	800	1.5							
78	10	18	15605	N24 E40	303	600	1.5							
78	10	19	15605	N24 E25	303	600	1.5							
78	10	20	15605	N24 E15	303	700	2.0							
78	10	21	15605	N24 E01	304	700	1.5							
78	10	22	15605	N24 W13	303	700	1.5							
78	10	24	15605	N24 W39	304	400	1.5							
78	10	25	15605	N24 W52	304	400	1.5							
78	10	26	15605	N24 W66	303	400	1.0							
78	10	27	15605	N24 W79	304	200	1.0							

MCMATH REGION 15613 CMP DATE 22.3

			CALCIUM PLAGE DATA					SUNSPOT DATA						
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H STA	AREA	CNT CLASS
78	10	19	15613	N17 E34	294	200	2.5							
78	10	20	15613	N16 E24	294	400	2.5							
78	10	21	15613	N15 E10	295	800	3.0	20269	N15 E08	296	(B)	3		
78	10	22	15613	N15 W04	294	800	2.5							
78	10	24	15613	N15 W30	295	1000	2.0							
78	10	25	15613	N15 W44	296	1000	2.5							
78	10	26	15613	N15 W57	294	700	2.5							
78	10	27	15613	N15 W70	295	800	2.0							
78	10	28	15613	N15 W83	295	400	1.5							

MCMATH REGION 15622 CMP DATE 22.4

			CALCIUM PLAGE DATA					SUNSPOT DATA						
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H STA	AREA	CNT CLASS
78	10	24	15622	S08 W28	293	100	1.5							

MCMATH REGION 15612 CMP DATE 23.1

			CALCIUM PLAGE DATA					SUNSPOT DATA						
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H STA	AREA	CNT CLASS
78	10	18	15612	N34 E60	283	100	1.5							
78	10	19	15612	N34 E45	283	200	2.0							
78	10	20	15612	N34 E33	285	200	1.0							

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MCMATH REGION 15611 CMP DATE 24.0 RETURN OF REGION 15572 ROTATION 2

			CALCIUM PLAGE DATA					SUNSPOT DATA						
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H STA	AREA	CNT CLASS
78	10	17	15611	S23 E87	270	800	2.0							
78	10	18	15611	S23 E72	271	1300	2.0							
78	10	19	15611	S23 E56	272	1000	3.0							
78	10	20	15611	S23 E45	273	1000	3.0							
78	10	21	15611	S23 E32	273	1000	3.0	20270	S20 E27	277	(AP)	4		
78	10	22	15611	S23 E18	272	1000	2.5							
78	10	24	15611	S23 W08	273	1000	2.5							
78	10	25	15611	S23 W21	273	800	2.5							
78	10	26	15611	S23 W34	271	700	2.0	20270	S21 W38	276	(AP)	4		
78	10	27	15611	S23 W47	272	600	1.5	20270	S20 W48	272	(AP)	3		
78	10	28	15611	S23 W60	272	600	1.5	20270	S21 W62	274	(AP)	3		
78	10	29	15611	S23 W72	270	500	1.0	20270	S22 W76	274	(AP)	2		

MCMATH REGION 15610 CMP DATE 24.8 RETURN OF REGION 15551 ROTATION 2

			CALCIUM PLAGE DATA					SUNSPOT DATA						
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H STA	AREA	CNT CLASS
78	10	17	15610	N27 E85	272	1000	3.5							
78	10	18	15610	N27 E78	265	2000	3.5							
78	10	19	15610	N27 E64	264	2000	3.5							
78	10	20	15610	N27 E54	264	2200	3.5							
78	10	21	15610	N27 E40	265	2400	3.0	20271	N32 E32	272	(AP)	4		
78	10		15610					20272	N27 E39	265	(B)	5		
78	10	22	15610	N27 E26	264	2400	3.0							
78	10	24	15610	N27 E03	262	2800	3.0							
78	10	25	15610	N27 W11	263	2800	3.0							
78	10	26	15610	N28 W26	263	2800	3.0	20271	N32 W30	268	(AP)	2		
78	10		15610					20272	N28 W26	264	(BP)	5		
78	10	27	15610	N27 W38	263	2800	3.0	20271	N33 W43	267	(AP)	3		
78	10		15610					20272	N28 W38	262	(B)	3		
78	10	28	15610	N27 W50	262	2800	3.0	20271	N33 W55	267	(AP)	4		
78	10		15610					20272	N27 W52	264	(B)	3		
78	10	29	15610	N27 W63	261	2800	3.0	20271	N32 W69	267	(AP)	3		
78	10		15610					20272	N28 W68	266	(AP)	3		
78	10	30	15610	N27 W76	261	2000	3.0							
78	10	31	15610	N27 W90	263	500	2.0							

MCMATH REGION 15633 CMP DATE 25.1

			CALCIUM PLAGE DATA					SUNSPOT DATA						
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H STA	AREA	CNT CLASS
78	10	29	15633	N01 W60	258	100	2.0							

MCMATH REGION 15615 CMP DATE 25.9

			CALCIUM PLAGE DATA					SUNSPOT DATA						
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H STA	AREA	CNT CLASS
78	10	19	15615	S18 E90	238	300	1.0							
78	10	20	15615	S18 E77	241	300	1.5							
78	10	21	15615	S18 E59	246	300	1.0							
78	10	22	15615	S18 E44	246	300	1.5							
78	10	24	15615	S18 E18	247	400	2.0							
78	10	25	15615	S17 E04	248	500	2.5							
78	10	26	15615	S17 W12	249	400	2.5	20274	S16 W12	250	(B)	2		
78	10	27	15615	S18 W23	248	500	2.5	20274	S16 W24	248	(B)	4		
78	10	28	15615	S18 W35	247	800	2.5	20274	S16 W37	249	(B)	3		
78	10	29	15615	S18 W49	247	900	2.5	20274	S16 W52	250	(B)	3		
78	10	30	15615	S18 W63	248	1300	3.5							
78	10	31	15615	S18 W76	249	900	2.5							

MCMATH REGION 15634 CMP DATE 26.0

			CALCIUM PLAGE DATA					SUNSPOT DATA						
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H STA	AREA	CNT CLASS
78	10	29	15634	S29 W48	246	300	2.0	20288	S28 W49	247	(AP)	2		
78	10	30	15634	S30 W60	125	600	2.0							
78	10	31	15634	S29 W73	246	600	2.5							

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OCTOBER 1978

MCMATH REGION 15614 CMP DATE 26.3

				CALCIUM PLAGE DATA				SUNSPOT DATA							
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT CLASS
78	10	19	15614	N13 E90	238	200	2.0								
78	10	20	15614	N18 E78	240	600	3.0								
78	10	21	15614	N18 E63	242	800	2.5	20273	N15 E60	244	X	1			
78	10	22	15614	N19 E48	242	800	2.5								
78	10	24	15614	N18 E24	241	1000	2.0								
78	10	25	15614	N18 E10	242	900	2.0								
78	10	26	15614	N18 W03	240	1000	1.5	20275	N19 E03	235	(B)	3			
78	10	27	15614	N18 W15	240	1100	1.5	20275	N20 W09	233	(B)	2			
78	10	28	15614	N18 W28	240	1200	1.5								
78	10	29	15614	N18 W40	238	1000	2.0	20283	N29 W37	235	(B)	3			
78	10	30	15614	N18 W55	240	800	2.0								
78	10	31	15614	N18 W65	238	600	2.0								

MCMATH REGION 15623 CMP DATE 27.3

				CALCIUM PLAGE DATA				SUNSPOT DATA							
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT CLASS
78	11	01	15623	N19 W67		300	1.0		N21 W62				B	20	6 C

MCMATH REGION 15627 CMP DATE 28.4

				CALCIUM PLAGE DATA				SUNSPOT DATA							
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT CLASS
78	10	25	15627	S38 E38	214	300	2.0								
78	10	26	15627	S37 E23	214	200	1.5								
78	10	27	15627	S38 E11	214	300	2.0								
78	10	28	15627	S38 E00	212	200	2.0								
78	10	29	15627	S38 W13		300	1.5								
78	10	30	15627	S38 W24	209	300	1.5								
78	10	31	15627	S38 W36	209	200	1.0								

MCMATH REGION 15619 CMP DATE 28.5 RETURN OF REGIONS 15558 AND 15585 ROTATIONS 3 AND 2

				CALCIUM PLAGE DATA				SUNSPOT DATA							
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT CLASS
78	10	22	15619	N20 E78	212	2000	3.0								
78	10	24	15619	N19 E53	212	2800	2.5								
78	10	25	15619	N19 E40	212	3200	3.0								
78	10	26	15619	N19 E26	211	2900	3.0	20276	N22 E24	214	(B)	5			
78	10		15619					20277	N18 E25	213	(AP)	4			
78	10	27	15619	N19 E15	210	3000	3.0	20276	N23 E13	211	(B)	4			
78	10		15619					20277	N18 E15	209	(BY)	5			
78	10	28	15619	N20 E00	212	2900	3.0	20276	N23 W03	215	(B)	3			
78	10		15619					20277	N18 E03	209	(BY)	4			
78	10	29	15619	N18 W08	206	2900	3.5	20276	N23 W16	214	(B)	3			
78	10		15619					20277	N18 W12	210	(BP)	4			
78	10	30	15619	N19 W25	210	3200	3.5								
78	10	31	15619	N20 W37	210	3600	3.5								
78	11	01	15619	N20 W51		3500	4.5		N18 W58				B	30	4 C
78	11	02	15619	N20 W65		2700	3.5	20289	N19 W69		(B)	3	B	20	1 B
78	11	03	15619	N20 W78		1300	3.0		N18 W84				B	10	1 A
78	11	04	15619	N20 W90		400	1.0								

MCMATH REGION 15621 CMP DATE 28.9

				CALCIUM PLAGE DATA				SUNSPOT DATA							
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT CLASS
78	10	22	15621	S24 E85	205	600	2.0								
78	10	24	15621	S24 E61	204	900	2.5								
78	10	25	15621	S24 E46	206	1100	2.5								
78	10	26	15621	S24 E30	207	700	2.0								
78	10	27	15621	S24 E17	208	700	2.5								
78	10	28	15621	S24 E05	207	700	2.5								
78	10	29	15621	S24 W07	205	900	2.5								
78	10	30	15621	S25 W21	206	700	2.5								
78	10	31	15621	S25 W34	207	700	2.5								
78	11	01	15621	S25 W47		600	2.0								
78	11	02	15621	S26 W60		500	1.0								
78	11	03	15621	S26 W73		200	1.0								

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MCMATH REGION 15620 CMP DATE 30.2

CALCIUM PLAGE DATA

YR	MO	DA	MC NO.	LAT	CMD	L	AREA	INT
78	10	22	15620	S13	E88	202	400	1.5
78	10	24	15620	S17	E73	192	3000	3.0
78	10	25	15620	S18	E60	192	3900	3.0
78	10	26	15620	S18	E46	191	3800	3.0
78	10		15620					
78	10	27	15620	S19	E33	192	3500	3.5
78	10		15620					
78	10	28	15620	S19	E20	192	3400	3.0
78	10		15620					
78	10		15620					
78	10	29	15620	S19	E08	190	3600	3.0
78	10		15620					
78	10		15620					
78	10	30	15620	S20	W07	192	4000	3.0
78	10	31	15620	S20	W20	193	4300	2.5
78	11	01	15620	S18	W33		4200	2.5
78	11	02	15620	S18	W46		3800	2.5
78	11		15620					
78	11	03	15620	S19	W59		3200	2.5
78	11	04	15620	S19	W74		3000	2.0
78	11	05	15620	S20	W85		800	1.0

SUNSPOT DATA

MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
20278	S17	E36	202	(BP)	4				
20279	S19	E52	186	(AP)	3				
20278	S15	E23	201	(AP)	4				
20279	S18	E41	183	(AF)	3				
20278	S16	E09	203	(AP)	5				
20279	S18	E27	185	(AF)	3				
20282	S19	E13	199	(AP)	2				
20278	S16	W05	203	(AP)	5				
20279	S18	E14	184	(AP)	3				
20284	S16	E05	193	(AF)	2				
20278	S17	W56		(AP)	5				
20290	S22	W54		(B)	3				
20278	S17	W68		(AF)	5				
20278	S15	W85		(AP)	5				

MCMATH REGION 15625 CMP DATE 30.2 RETURN OF PART OF REGION 15557 ROTATION 3

CALCIUM PLAGE DATA

YR	MO	DA	MC NO.	LAT	CMD	L	AREA	INT
78	10	24	15625	N38	E69	196	900	1.0
78	10	25	15625	N40	E57	195	1000	1.0
78	10	26	15625	N40	E45	192	1100	1.5
78	10	27	15625	N40	E32	193	1200	2.5
78	10	28	15625	N40	E20	192	1200	2.5
78	10	29	15625	N40	E08	190	1200	2.5
78	10	30	15625	N40	W05	190	1000	2.0
78	10	31	15625	N40	W15	188	1000	2.0
78	11	01	15625	N40	W27		1000	2.0
78	11	02	15625	N40	W40		1100	1.5
78	11	03	15625	N40	W53		1200	1.5
78	11	04	15625	N40	W64		800	1.5
78	11	05	15625	N40	W77		600	1.0

SUNSPOT DATA

MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
20298	N32	W55		(B)	3				

MCMATH REGION 15637 CMP DATE 30.4

CALCIUM PLAGE DATA

YR	MO	DA	MC NO.	LAT	CMD	L	AREA	INT
78	10	29	15637	N18	E10	188	200	1.0
78	10	30	15637	N17	W01	186	200	1.0
78	10	31	15637	N18	W13	186	200	2.0
78	11	01	15637	N17	W26		300	2.5
78	11	02	15637	N17	W40		100	1.0
78	11	03	15637	N17	W54		100	1.0
78	11	04	15637	N17	W69		100	1.0
78	11	05	15637	N16	W88		300	2.0

SUNSPOT DATA

MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS

MCMATH REGION 15628 CMP DATE 31.7 RETURN OF REGION 15564 ROTATION 4

CALCIUM PLAGE DATA

YR	MO	DA	MC NO.	LAT	CMD	L	AREA	INT
78	10	25	15628	S30	E83	169	600	1.5
78	10	26	15628	S31	E68	169	1100	1.0
78	10	27	15628	S32	E54	171	1200	2.0
78	10	28	15628	S32	E40	172	1200	2.0
78	10	29	15628	S32	E28	170	1200	2.0
78	10	30	15628	S31	E15	170	1200	2.0
78	10	31	15628	S31	E02	171	1100	2.0
78	11	01	15628	S30	W11		1100	1.5
78	11	02	15628	S30	W25		1000	1.5
78	11	03	15628	S30	W38		1000	1.0
78	11	04	15628	S30	W50		1000	1.0
78	11	05	15628	S30	W62		900	1.0

SUNSPOT DATA

MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS

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MCMATH REGION 15626 CMP DATE 31.8

			CALCIUM PLAGE DATA						SUNSPOT DATA								
YR	MO	DA	MC NO.	LAT	CMD	L	AREA	INT	MW NO.	LAT	CMD	L	MAG.	H	STA	AREA	CNT	CLASS
78	10	25	15626	N37	E80	172	800	1.0										
78	10	26	15626	N37	E68	169	700	2.0										
78	10	27	15626	N36	E56	169	600	2.0										
78	10	28	15626	N37	E42	170	500	2.5										
78	10	29	15626	N36	E28	170	700	2.0	20285	N35	E24	174	(AF)	2				
78	10	30	15626	N37	E14	171	600	1.5										
78	10	31	15626	N37	E03	170	600	1.5										
78	11	01	15626	N37	W09		400	1.5										
78	11	02	15626	N37	W23		600	1.5										
78	11	03	15626	N36	W36		600	2.0										
78	11	04	15626	N35	W51		800	2.0		N31	W59				B	10	2	B
78	11	05	15626	N34	W64		900	2.5		N32	W72				B	10	4	B

Note: No calcium spectroheliograms were secured at the McMath-Hulbert Observatory on October 3 and 23, 1978.
No sunspot observations were made at Mt. Wilson on October 17, 18, 19, 20, 22, 23, 24, 25, 30 and 31, 1978.

DAILY CALCIUM PLAGE INDEX

SEPTEMBER 1978

YR	MO	DAY	INDEX	YR	MO	DAY	INDEX	YR	MO	DAY	INDEX
78	10	1	38.0	78	10	11	36.4	78	10	21	38.2
78	10	2	43.4	78	10	12	38.7	78	10	22	31.2
78	10	3	*	78	10	13	33.5	78	10	23	*
78	10	4	36.5	78	10	14	36.9	78	10	24	31.7
78	10	5	30.7	78	10	15	47.5	78	10	25	35.1
78	10	6	26.7	78	10	16	48.3	78	10	26	30.8
78	10	7	25.7	78	10	17	48.2	78	10	27	35.1
78	10	8	24.6	78	10	18	43.8	78	10	28	35.5
78	10	9	26.4	78	10	19	38.9	78	10	29	41.0
78	10	10	27.1	78	10	20	39.5	78	10	30	44.0
								78	10	31	45.1

* NO OBSERVATIONS

SUDDEN IONOSPHERIC DISTURBANCES

OCTOBER 1978

DAY	UNIVERSAL TIME START	END	MAX	IMP	WIDE SPREAD INDEX	NUMBER OF STATION REPORTS BY TYPE SWF	SCNA	SEA	SPA	LF-SPA	SES	SFD	KNOWN FLARE	McMATH REGION
01	0703	1011	0730	3	1				1				0700E	15570
01	0715	0835	0735	3	5	4		3	3		2		0713	15564
01	1330	1455	1345	1-	5			1			6		1377	15551
03	0711	0831	0728	1-	3		*	2					0715	15566
03	0758	0910	0820	1-	1				1				0755	15570
03	1420	1535	1437	1-	1				1		1		1422	15569
04	0059	0141	0103	1-	1				1				0056	X-RAY
04	0331	0357	0342	1-	1				1				0333	15540
04	1415	1500	1429	1-	3						6		1411	15570
05	0737	0800	0746	1-	3			1	2		1		0733	X-RAY
05	1113	1225	1124	2	5	4	1	6	4		3		1110	X-RAY
05	1226	1301	1231	1-	1				1				*	
05	1304	1327	1310	1-	1				1				1301	X-RAY
05	1338	1500	1415	1-	1				1		1		1337	15570
05	1949	2007D	1956	1	5	1			1	1	5		1942	X-RAY
05	2007	2159	2027	1-	5				2	1	5		2002	X-RAY
06	1643	1755	1706	1+	5	3	1	3	2	1	11		1646	15587
07	1515	1605	1530	1-	1				1				1513	X-RAY
08	0120E	0205D	0132	1-	1				1				0121	15570
08	0203E	0257	0207	1-	1				1				*	
08	0347	0419D	0351	1-	1				1				0346	X-RAY
08	0414	0518	0432	1-	1				1				0420E	15570
08	0837	0944	0842	1-	5	1		5	3		2		0835	15587
08	0930	1000	0934	1-	1						1		0927	X-RAY
08	1345	1407	1400	1-	3	1			1		1		1342E	15570
08	1434	1512	1500	1-	3			1	1		1		1439	15570
08	2008	2051	2010	1-	3	1							2007	15570
09	0003	0023D	0010	1-	1				1				0001	15570
09	0025	0109	0031	1-	1				1				0023	X-RAY
09	0845	0930	0855	1-	1			1					0841	15570
09	1110	1210	1147	1-	5			2	1		1		1106	X-RAY
09	1420	1440	1422	1-	1			1					1416	15587
09	1913	1934	1918	1-	5						7		1909	X-RAY
09	1942	2100	2018	1	5	3	1	2	1	1	10		1937	X-RAY
10	0006	0117	0042	1-	1				1				*	
10	0034	0102	0044	1-	1				1				0031	X-RAY
10	0454	0544	0500	1-	1				1				0451	15570
10	1010	1125	1038	1-	5			2	2				1009	15570
10	1031	1120	1041	1	3	3		4	1		2		1030	15570
10	1251	1321	1302U	1-	1			1					1247	15582
10	1324	1339	1325	1-	1			1					1321E	15591
11	1457	1518	1505	1-	1			1					1457E	15587
11	2322	0031	2329	1-	3				2				2317	X-RAY
12	0128	0700	0243	2	3	1			1				0124	X-RAY
12	1456	1715	1508	1-	5	3		5	2		10		1442	15582
12	1839	1857	1846	1-	1	1							1839	15588
13	0339	0451	0344	1-	1				1				0336	X-RAY
13	0452	0538D	0506	1-	1				1				0448	15582
13	0538E	0725D	0631	1-	1				1				0543	15587
13	0730	0750	0737	1-	5			1	2		1		0729	15582
13	1236	1350	1247	1-	5	5	1	7	3		10		1233	15587
13	1638	1715	1653	1-	5	1		1	1		12		NF	
13	1747	1815	1752	1-	5	1					10		NF	
13	1829	1900	1836	1-	5	1					5		1826	X-RAY
14	0100	0152D	0106	1-	1				1				0100	X-RAY
14	0152E	0228D	0158	1-	1				1				0151	X-RAY
14	0327	0518	0342	1	1				1				0329	X-RAY
14	0648	0800	0701	1-	1						1		0647	X-RAY
14	1244	1354	1253	1	5	2	1	6	4		7		1242	X-RAY
14	1458	1600	1509	1-	5	1		1	1		7		NF	
14	1915	1943	1922	1-	5				1		8		1910	X-RAY
14	2108	2156	2128	1-	5	1			3		7		2110	15587
14	2324	0204	2341	2	5	2			2		3		2327	X-RAY
15	0216	0323	0228	1	3	1			1		1		0215	X-RAY
15	0350	0507	0404	1	3	1			1		1		0350E	15599
15	0900	0944D	0944	1-	1						1		0856E	15589
15	0930	1114	0943	2	5	4	1	6	4		2		NF	
15	1046	1055	1050	1-	5			1	2		2		NF	
15	1115	1205	1130	1-	5			4	2		2		NF	
15	1256	1340	1305	1	5	3		6	3		9		1254	X-RAY
15	1608	1642	1614	1-	5	1			1		7		1608	15587
15	1834	1857	1846	1-	5	3	1	1			10		1831	15587
15	1942	2045	1946	1	5	4		1			11		1930	15605

SUDDEN IONOSPHERIC DISTURBANCES

OCTOBER 1978

DAY	UNIVERSAL TIME START	END	MAX	IMP	WIDE SPREAD INDEX	NUMBER OF STATION REPORTS BY TYPE SWF	SCNA	SEA	SPA	LF-SPA	SES	SFD	KNOWN FLARE	McMATH REGION
16	0036	0118	0052	1-	1				1				0040	X-RAY
16	0118E	0152D	0127	1-	1				1				0117	X-RAY
16	0152E	0307D	0204	1	1				1				0152	X-RAY
16	0307E	0428	0315	1	1				1				0305	X-RAY
16	0739	0800	0743	1-	5			2	2				0737E	15591
16	0807	0820	0809	1-	1				1				0807E	15587
16	0945	1015	0956	1-	5			3	2		2		0941	15605
16	1736	1805	1749	1-	5	2					7		1734	15587
16	1945	2030	1953	1-	3						2		1943	15587
16	2142	2309	2149	1+	5	2			1		6		2142	15598
18	2200	2311	2213	1-	3				2		1		2158	X-RAY
19	0408	0542	0413	1+	5	2		1	1		1		0404	X-RAY
19	0646	0704	0649	1-	1			1					*	
19	0749	0839	0757	1	5	4		6	3		2		0747	15610
19	1115	1125D	1125	1-	3			1	1		1		1113	15610
19	1147	1315	1159	1	5	2		5	3		3		1149	15610
19	1437	1500	1441	1-	5			1	2		4		1435	X-RAY
19	1617	1710	1621	1-	5	2			1		11		1606	15610
19	1709	1728	1713	1-	3						5		1708	15591
19	1756	1900	1801	1-	5				1		7		1755	15610
20	0122	0240	0140	1-	1				1				0218E	15591
20	0700	0902	0810	1	1				1				0656	X-RAY
20	1044	1130	1046	1-	3				1		2		0141	15598
20	1230	1320	1236	1-	1				1		1		1231	15591
20	1328	1505	1341	1-	3			1					1327	15591
20	1704	1738	1712	1-	3						5		1700	15591
20	2023	2100	2030	1-	3						2		2020	15610
20	2143	2214	2150	1-	3				1		1		2138	15591
21	0157	0237	0214	1-	3	1			1				9157	X-RAY
21	0248	0338	0300	1	1				1				0247	15610
21	0557	0724	0606	1	1				1				0558E	15591
21	1357	1420	1405	1	5			5	2		8		1407E	15591
21	1557	1715	1608	1	5	1		1	1	1	9		1551	15593
21	2027	2104	2038	1-	5	1		1	3	1	10		2028E	15590
22	0114	0149	0120	1-	1				1				0113	X-RAY
23	0239	0320	0250	1-	1				1				0237	X-RAY
23	0323E	0353	0330	1-	1				1				0321	X-RAY
23	0943	1030	0952	1-	5			1	4		3		0943	X-RAY
23	1205	1312	1242U	1-	1			1					*	
23	1655	1729	1710	1-	1						1		1700	X-RAY
24	0608	0734	0616	1-	1				1				0605	X-RAY
25	0202	0352	0248	1-	1				1				0206E	15610
25	0900	1000	0912	1-	1						1		0859	15628
25	1148	1230	1154	1-	5	2		5	4		3		1146	15631
27	1723	1736	1728	1-	1	1							1724E	15619
28	0526	0559	0530	1-	1				1				0528E	15619
28	0938	1000	0941	1-	3				1		1		0938	15619
28	1559	1744	1606	1+	5	3	1	2	3	1	11		1557	15619
28	2011	2034	2015	1-	5	1			1		4		2011	15610
28	2231	2319	2236	1-	5				3		1		2228	X-RAY
29	0415	0454	0430	1-	1				1				0408	X-RAY
29	1006	1016	1010	1-	1				1				1002	X-RAY
29	1321	1340	1328	1-	3				2		1		1323E	15619

PERIODS OF NO OBSERVATIONS:

DATE	TIME (UT) and STATION
01	0000-2400 A3
02	1000-1100 CL
03	0000-2400 TN, 0700-1200 UM (13 kHz), 1000-1330 UM (16 kHz)
09	0000-2400 CL, 1600-2030 UM (13 kHz)
10-12	0000-2400 CL
10	0000-2400 TN, 1000-1330 UM (16 kHz), 2015-2230 UM (13 kHz)
11	0300-0800 UM (13 kHz)
12	0000-2400 A28
16	0000-2400 CL, 0000-2400 A3
17	1000-1330 UM (16 kHz)
20	0000-2400 A3
21	0000-2400 TN
22	0000-2400 A3
23-31	0000-2400 A45
24-27	0000-2400 A3
24	0000-2400 CL, 0000-2400 TN, 0904-1250 TM, 1000-1700 UM (16 kHz) 1245-1700 UM (13 kHz)
29-31	0000-2400 A3
30	0000-2400 A26
31	1230-1505 UM (13 kHz)

SUDDEN IONOSPHERIC DISTURBANCES

OCTOBER 1978

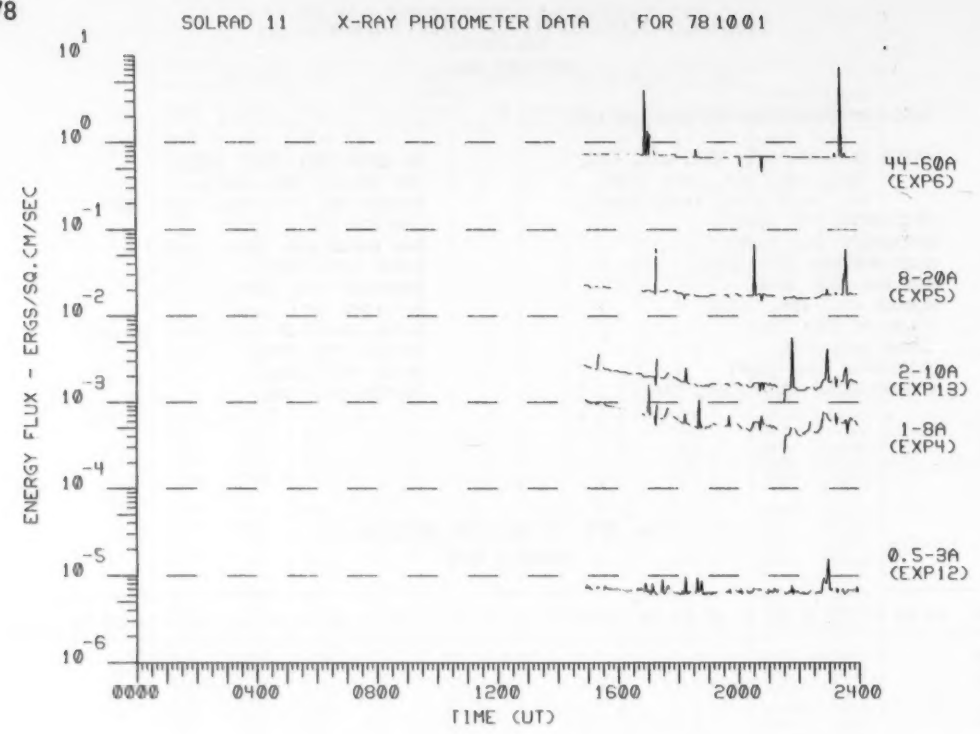
STATIONS REPORTING FOR OCTOBER 1978

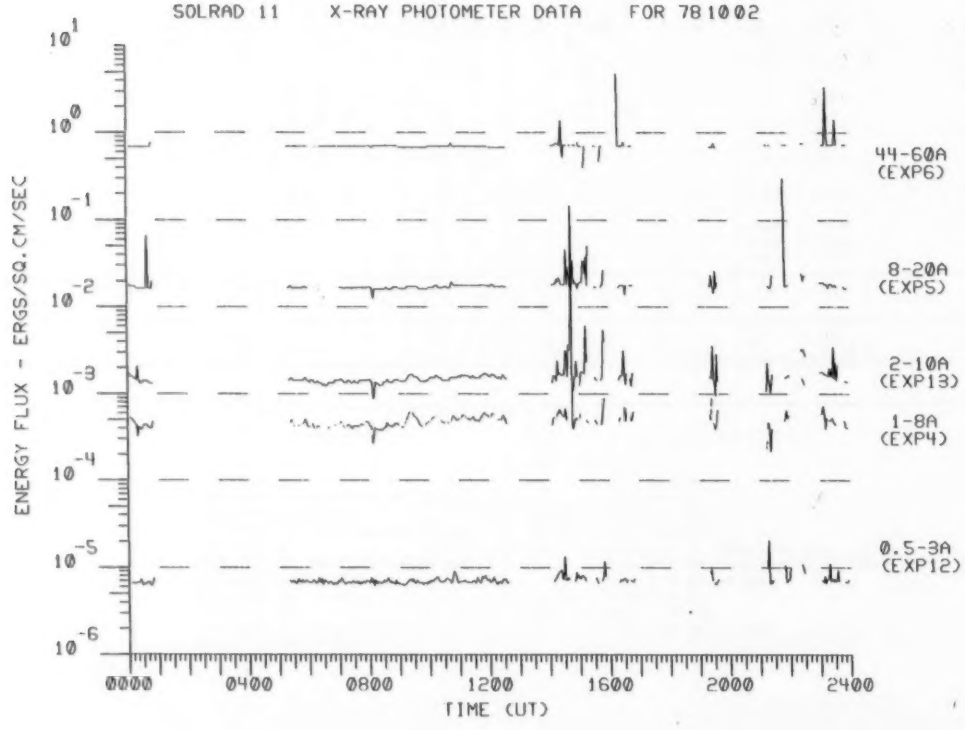
AAVSO (A1, A3, A19, A21, A26, A28, A31, A40, A45, A46) (SES)
(A1, A31) (SEA) (A31) (SWF)
CHILWORTH (CL) (SCNA)
DARMSTADT (DA) (SWF)
HERSTMONCEUX (HC) (SEA)
HIRAISO (HI) (SWF)
HOBART (TA) (SEA, SES)
HUANCAYO (HU) (SWF)
INUBO (IN) (SPA)
JULIUSRUH (JH) (SWF)
KUHLUNGSBORN (KU) (SEA, SPA)
MC MATH (MC) (SWF, SCNA)
NEW JERSEY (NJ) (SES)
PANSKA VES (PU) (SWF, SEA, SES)
PRESTON (LO) (SEA)
SAO PAULO (UM) (SES, SPA)
SOFIA (SF) (SES)
SOMERTON (SO) (SWF)
ST CLOUD (SC) (SES)
TABLE MOUNTAIN (TM) (SPA, LF-SPA)
TORINO (TN) (SPA)
UPICE (UI) (SEA)
VSETIN (VS) (SEA)

SIDs BY McMATH REGION

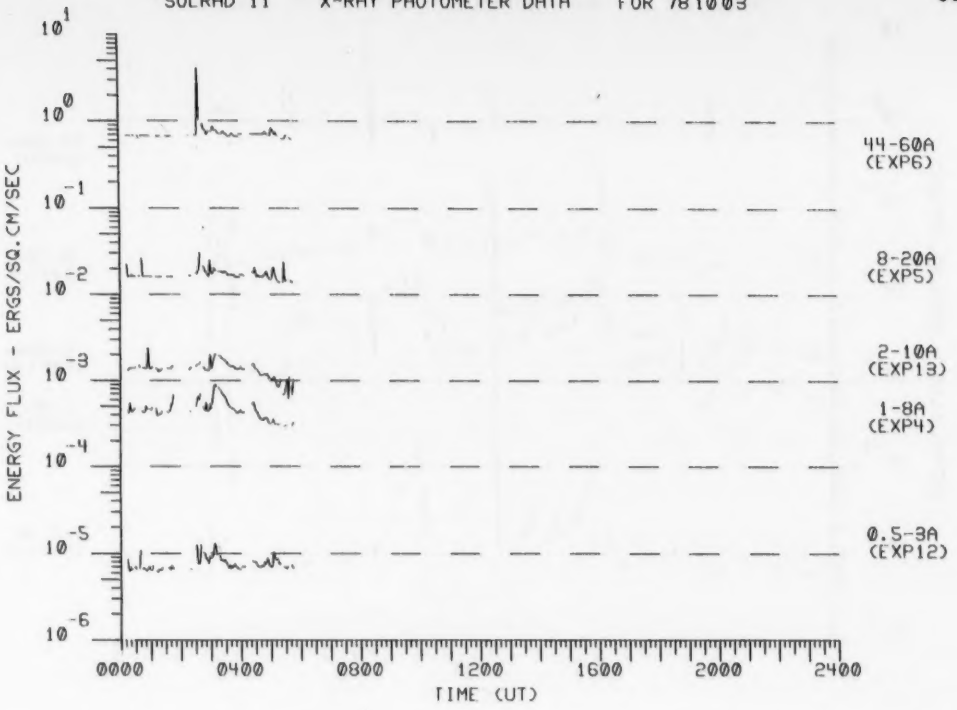
OCTOBER 1978

DAY	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
REGION																															
15540				1																											
15551	1																														
15564	1																														
15566			1																												
15569			1																												
15570	1		1	1	1			5	2	3																					
15582										1		1	2																		
15587						1		1	1		1		2	1	2	3															
15588												1																			
15589															1																
15590																				1	1										
15591										1						1			1	5	2										
15593																					1										
15598															1	1				1											
15605															1	1								1							
15610																			5		1				1			1			
15619																											1	3	1		
15628																									1						
15631																									1						
X-RAY				1	5		1	2	4	1	1	1	2	7	2	4		1	2	1	1	1	5					1	2		
UNKNOWN													2	1	3																
NO FP					1		1		1										1			1									

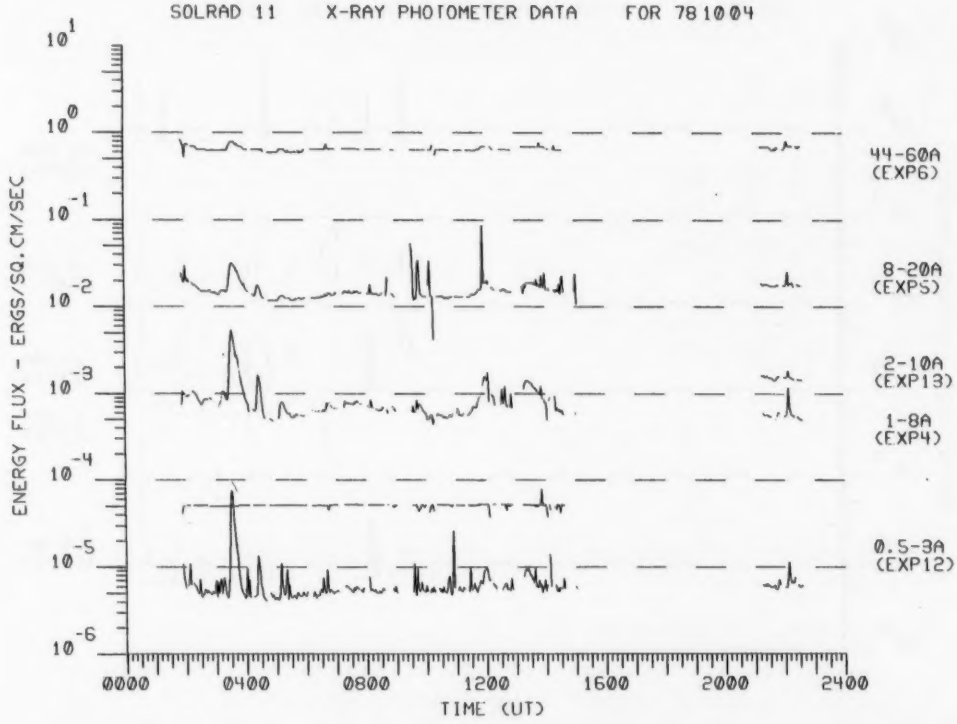

SOLRAD 11 X-RAY PHOTOMETER DATA FOR 781001
ENERGY FLUX - ERGS/SQ.CM/SEC
10^{1}
10^{0}
10^{-1}
10^{-2}
10^{-3}
10^{-4}
10^{-5}
10^{-6}
44-60A (EXP6)
8-20A (EXP5)
2-10A (EXP13)
1-8A (EXP4)
0.5-3A (EXP12)
0000
0400
0800
1200
1600
2000
2400
TIME (UT)


SOLRAD 11 X-RAY PHOTOMETER DATA FOR 781002
ENERGY FLUX - ERGS/SQ.CM/SEC
10^{1}
10^{0}
10^{-1}
10^{-2}
10^{-3}
10^{-4}
10^{-5}
10^{-6}
44-60A (EXP6)
8-20A (EXP5)
2-10A (EXP13)
1-8A (EXP4)
0.5-3A (EXP12)
0000
0400
0800
1200
1600
2000
2400
TIME (UT)

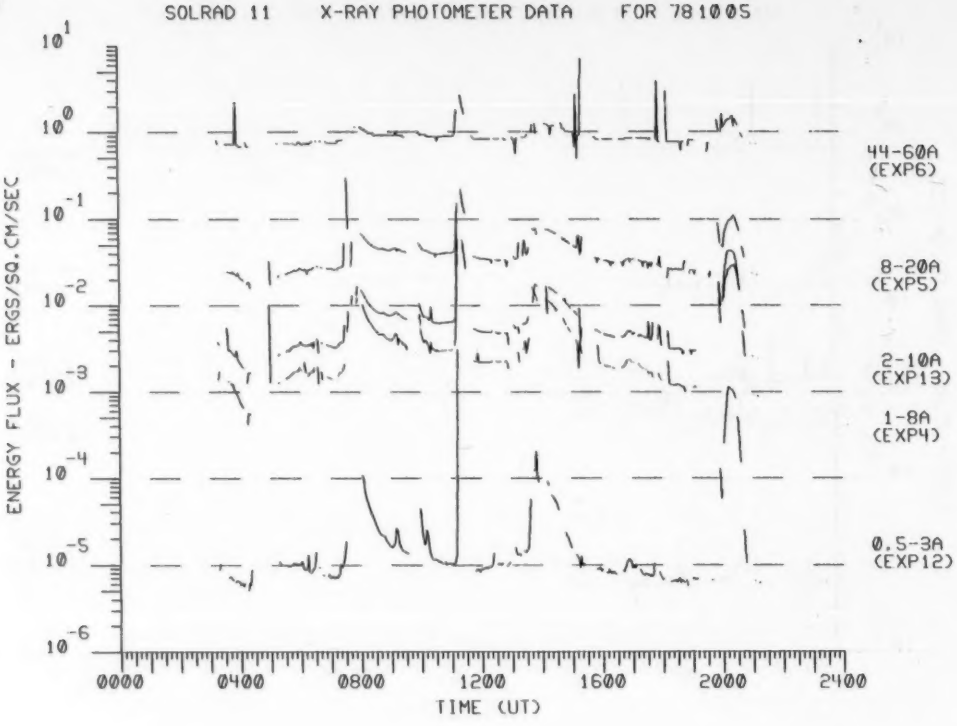
SOLRAD 11 X-RAY PHOTOMETER DATA FOR 781003



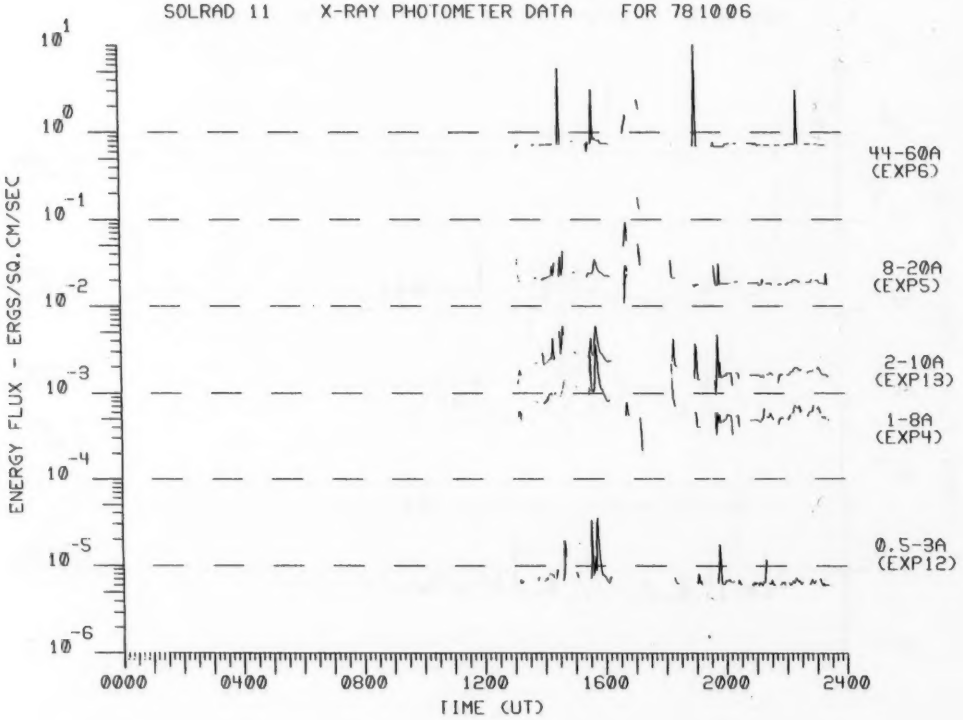
SOLRAD 11 X-RAY PHOTOMETER DATA FOR 781004

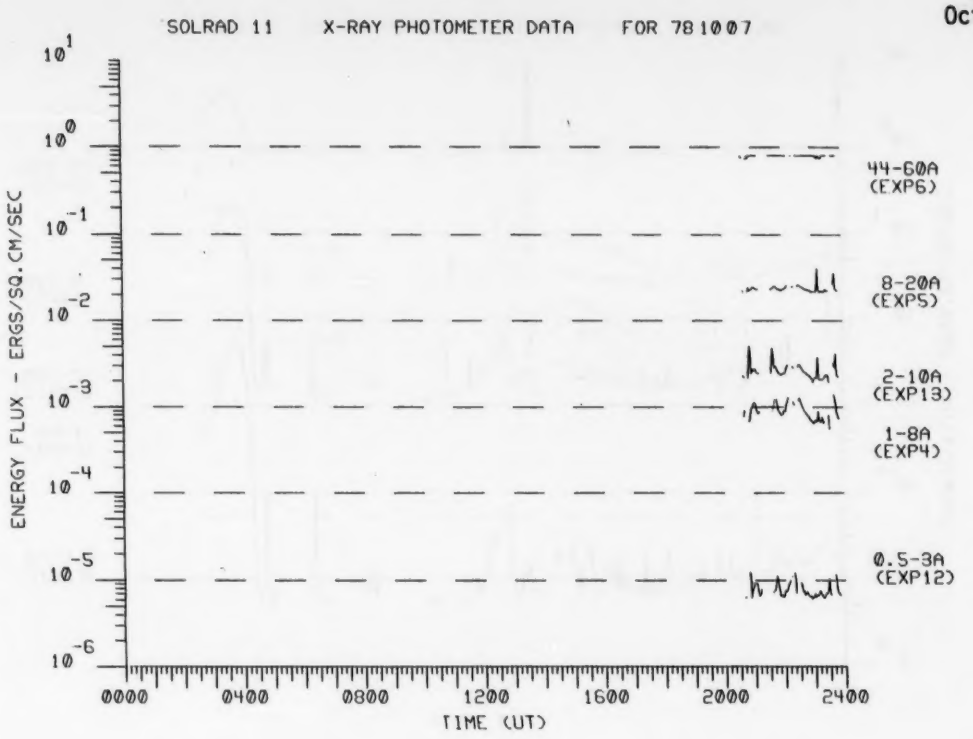


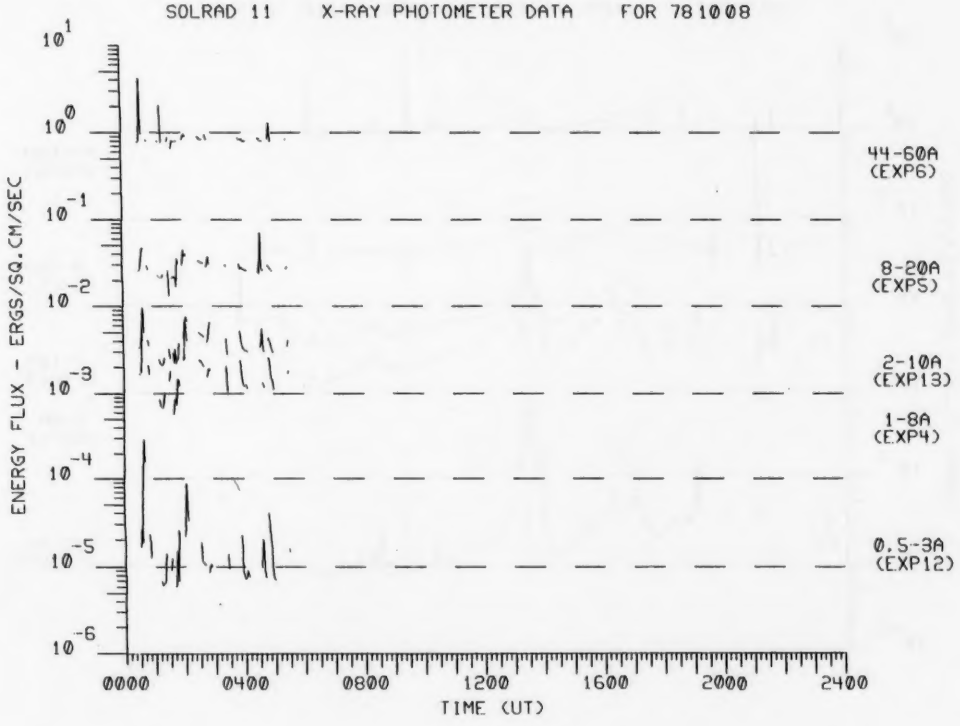
SOLRAD 11 X-RAY PHOTOMETER DATA FOR 781005



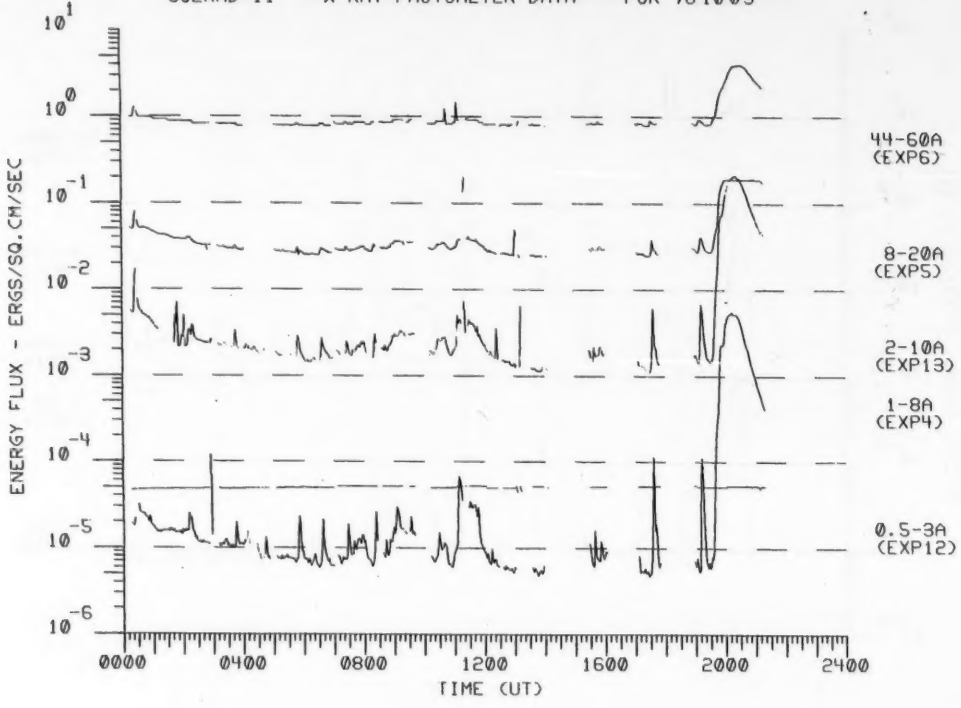
SOLRAD 11 X-RAY PHOTOMETER DATA FOR 781006



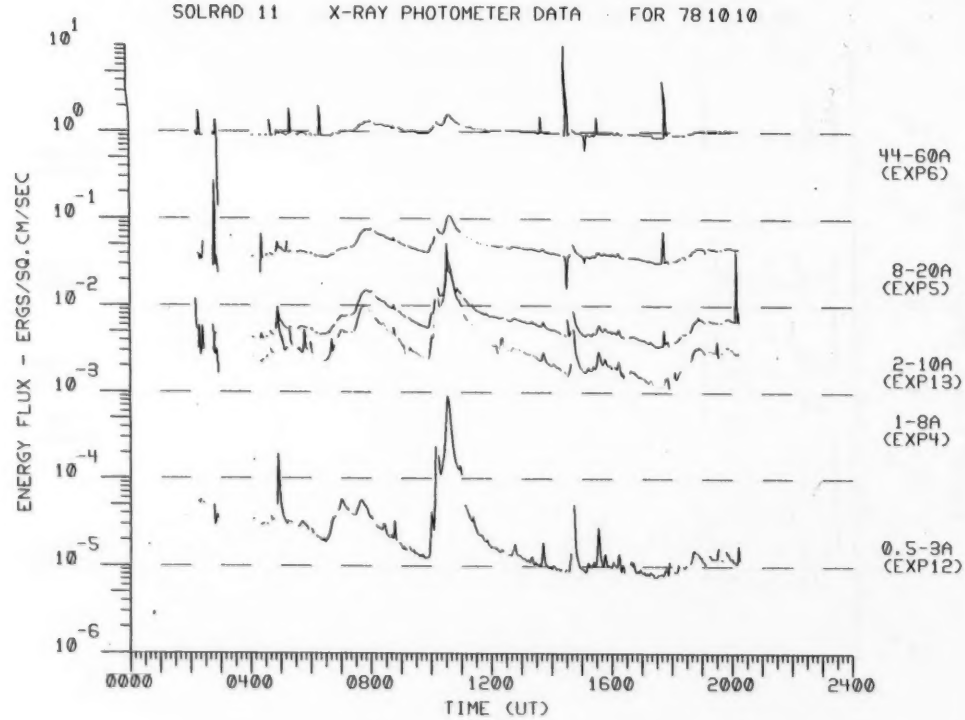

SOLRAD 11 X-RAY PHOTOMETER DATA FOR 781007
ENERGY FLUX - ERGS/SQ.CM/SEC
10^{1}
10^{0}
10^{-1}
10^{-2}
10^{-3}
10^{-4}
10^{-5}
10^{-6}
44-60A (EXP6)
8-20A (EXP5)
2-10A (EXP13)
1-8A (EXP4)
0.5-3A (EXP12)
0000
0400
0800
1200
1600
2000
2400
TIME (UT)

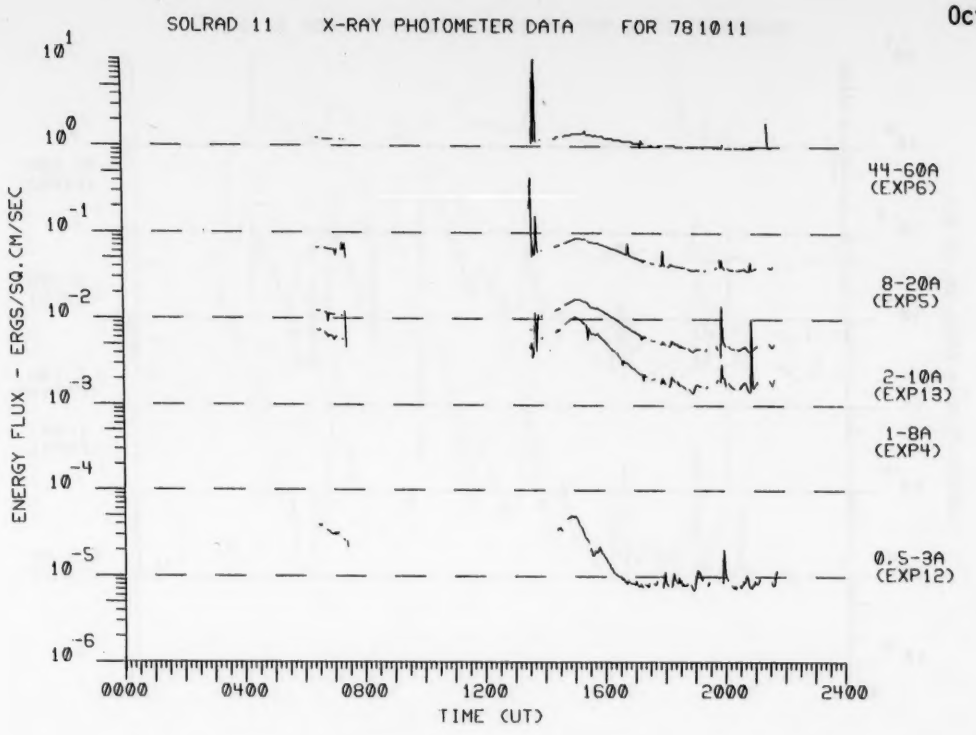

SOLRAD 11 X-RAY PHOTOMETER DATA FOR 781008
ENERGY FLUX - ERGS/SQ.CM/SEC
10^{1}
10^{0}
10^{-1}
10^{-2}
10^{-3}
10^{-4}
10^{-5}
10^{-6}
44-60A (EXP6)
8-20A (EXP5)
2-10A (EXP13)
1-8A (EXP4)
0.5-3A (EXP12)
0000
0400
0800
1200
1600
2000
2400
TIME (UT)

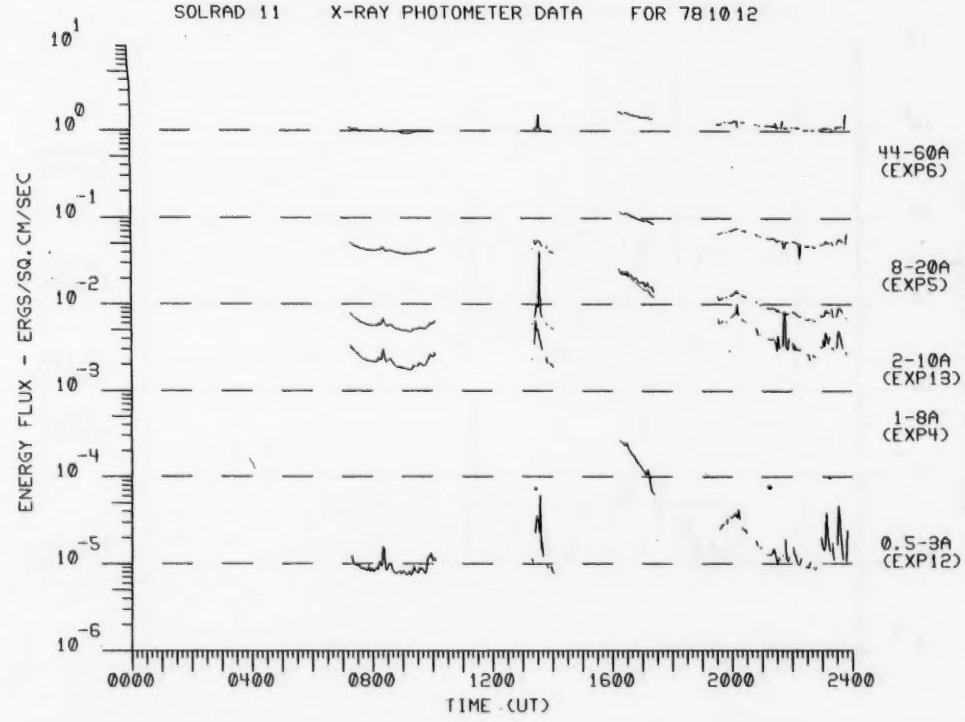
SOLRAD 11 X-RAY PHOTOMETER DATA FOR 781009

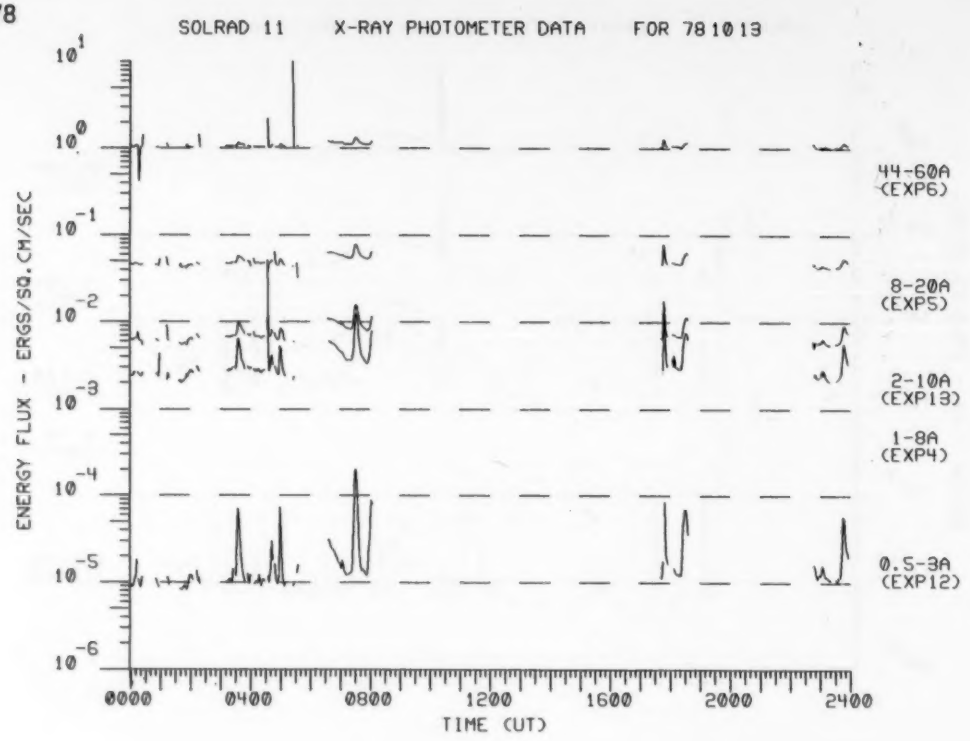


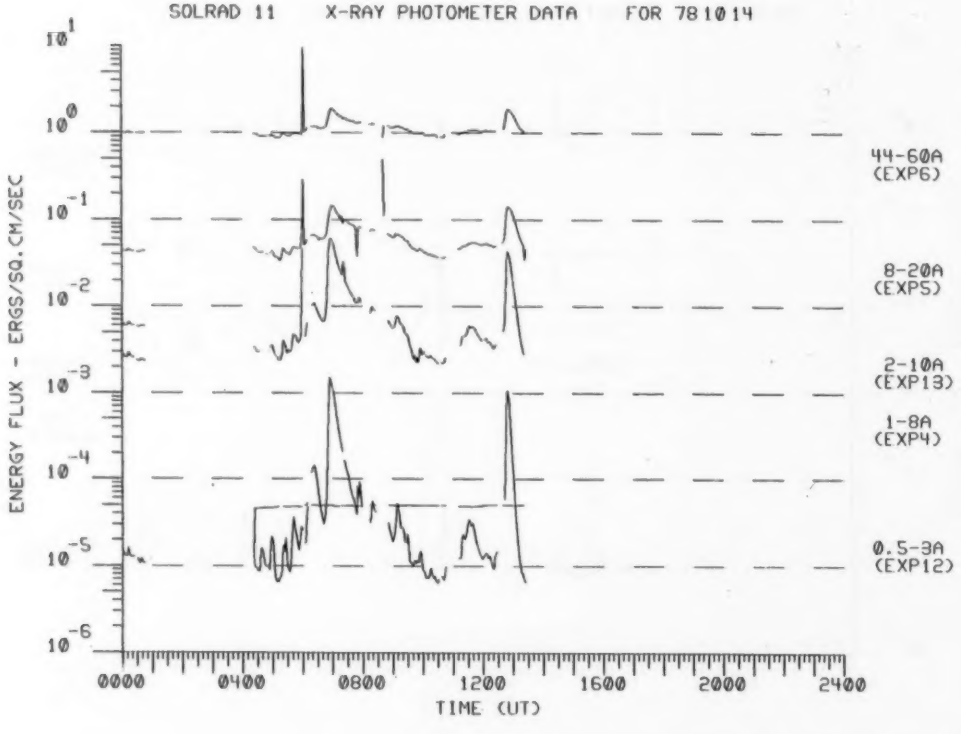
SOLRAD 11 X-RAY PHOTOMETER DATA FOR 781010




SOLRAD 11 X-RAY PHOTOMETER DATA FOR 781011
ENERGY FLUX - ERGS/SQ.CM/SEC
10^{1}
10^{0}
10^{-1}
10^{-2}
10^{-3}
10^{-4}
10^{-5}
10^{-6}
44-60A (EXP6)
8-20A (EXP5)
2-10A (EXP13)
1-8A (EXP4)
0.5-3A (EXP12)
0000
0400
0800
1200
1600
2000
2400
TIME (UT)


SOLRAD 11 X-RAY PHOTOMETER DATA FOR 781012
ENERGY FLUX - ERGS/SQ.CM/SEC
10^{1}
10^{0}
10^{-1}
10^{-2}
10^{-3}
10^{-4}
10^{-5}
10^{-6}
44-60A (EXP6)
8-20A (EXP5)
2-10A (EXP13)
1-8A (EXP4)
0.5-3A (EXP12)
0000
0400
0800
1200
1600
2000
2400
TIME (UT)


SOLRAD 11 X-RAY PHOTOMETER DATA FOR 781013
ENERGY FLUX - ERGS/SQ.CM/SEC
10^{1}
10^{0}
10^{-1}
10^{-2}
10^{-3}
10^{-4}
10^{-5}
10^{-6}
44-60A (EXP6)
8-20A (EXP5)
2-10A (EXP13)
1-8A (EXP4)
0.5-3A (EXP12)
0000
0400
0800
1200
1600
2000
2400
TIME (UT)


SOLRAD 11 X-RAY PHOTOMETER DATA FOR 781014
ENERGY FLUX - ERGS/SQ.CM/SEC
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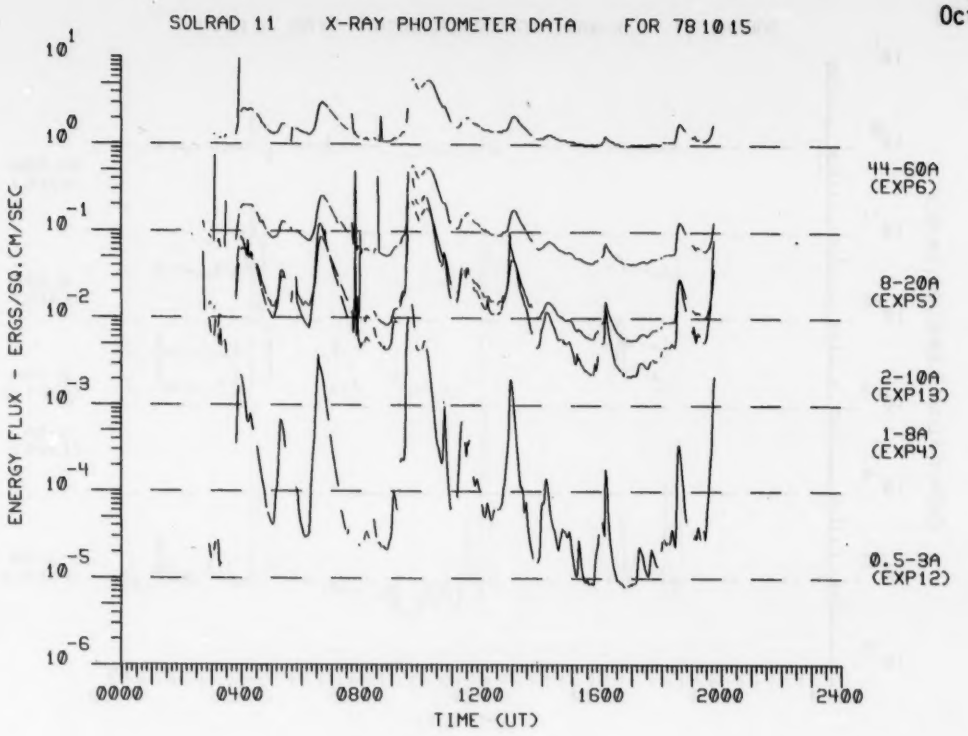
10^{0}
10^{-1}
10^{-2}
10^{-3}
10^{-4}
10^{-5}
10^{-6}
44-60A (EXP6)
8-20A (EXP5)
2-10A (EXP13)
1-8A (EXP4)
0.5-3A (EXP12)
0000
0400
0800
1200
1600
2000
2400
TIME (UT)


SOLRAD 11 X-RAY PHOTOMETER DATA FOR 781015
ENERGY FLUX - ERGS/SQ.CM/SEC
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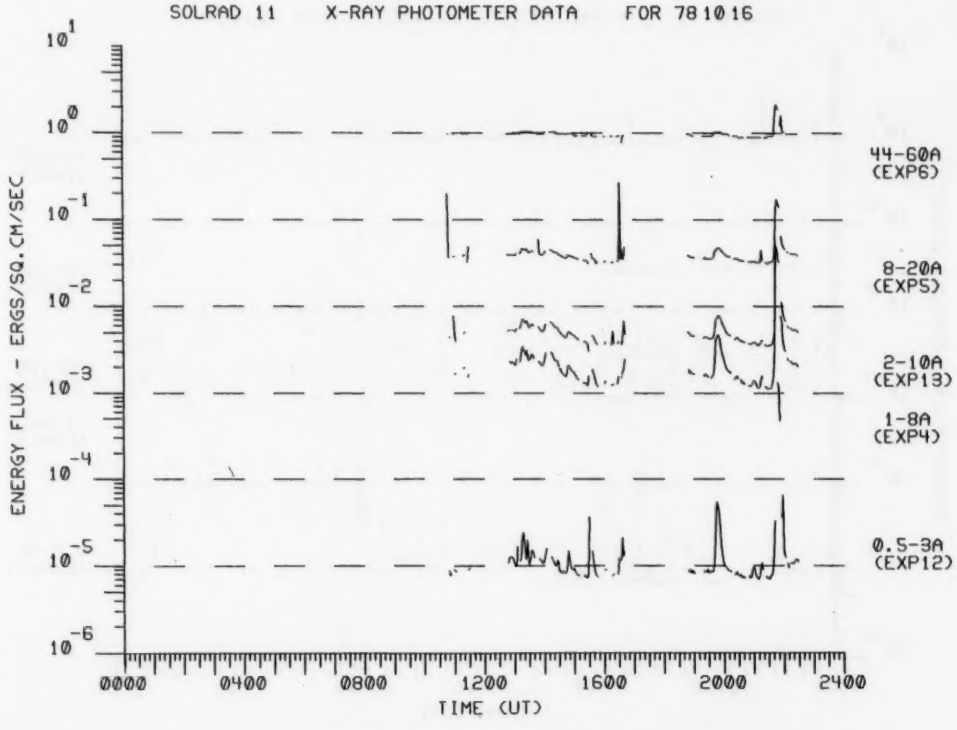
10^{0}
10^{-1}
10^{-2}
10^{-3}
10^{-4}
10^{-5}
10^{-6}
44-60A (EXP6)
8-20A (EXP5)
2-10A (EXP13)
1-8A (EXP4)
0.5-3A (EXP12)
0000
0400
0800
1200
1600
2000
2400
TIME (UT)


SOLRAD 11 X-RAY PHOTOMETER DATA FOR 781016
ENERGY FLUX - ERGS/SQ.CM/SEC
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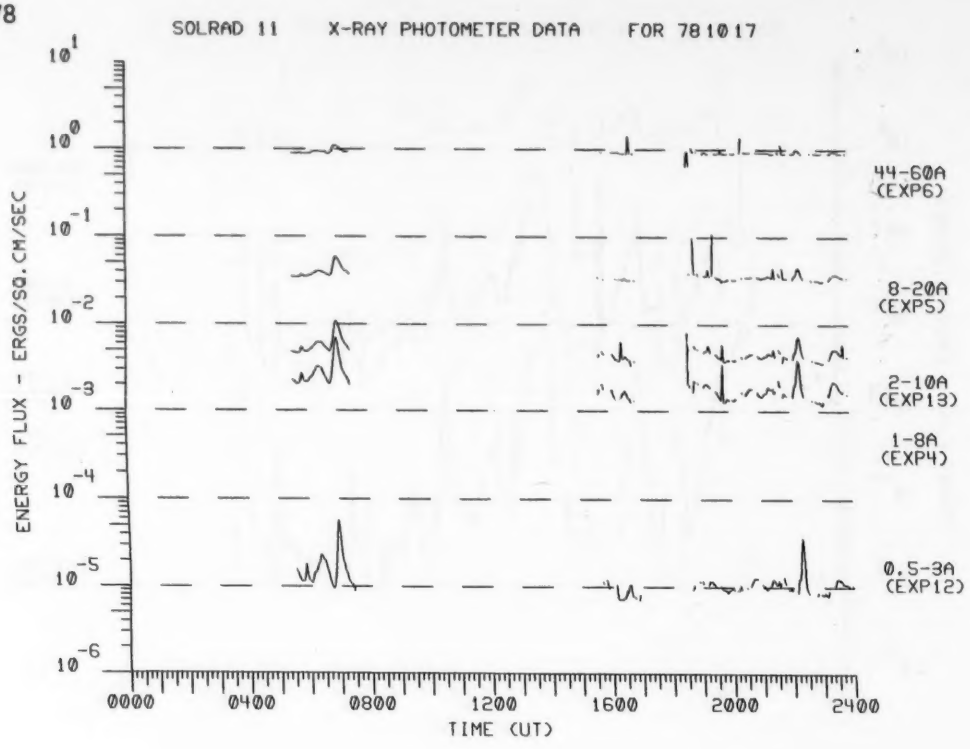
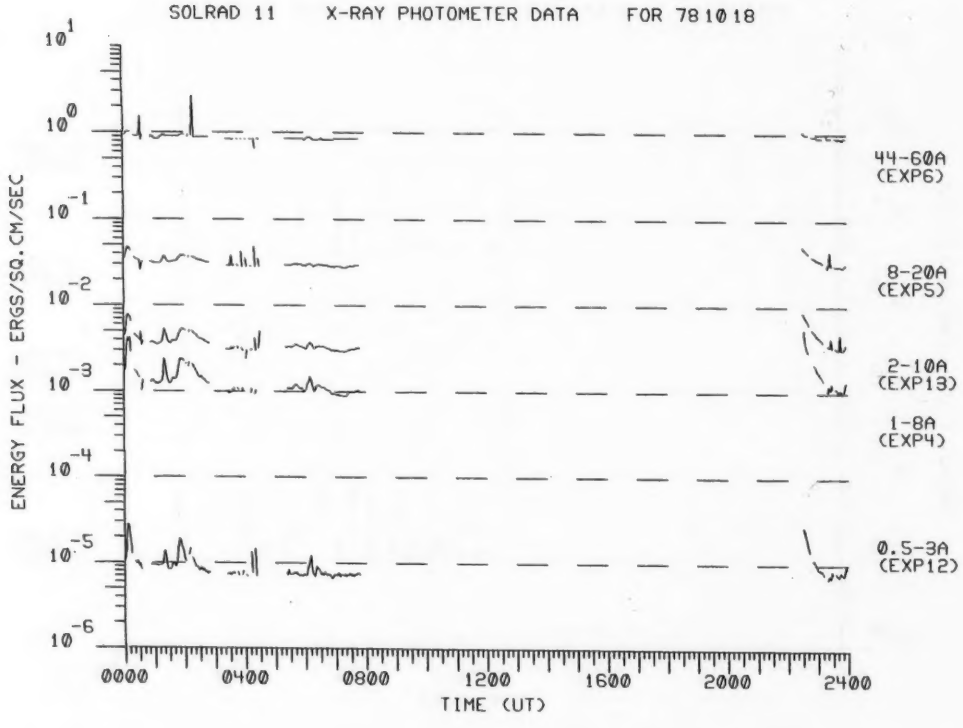
10^{0}
10^{-1}
10^{-2}
10^{-3}
10^{-4}
10^{-5}
10^{-6}
44-60A (EXP6)
8-20A (EXP5)
2-10A (EXP13)
1-8A (EXP4)
0.5-3A (EXP12)
0000
0400
0800
1200
1600
2000
2400
TIME (UT)


SOLRAD 11 X-RAY PHOTOMETER DATA FOR 781017
ENERGY FLUX - ERGS/SQ.CM/SEC
10^{1}
10^{0}
10^{-1}
10^{-2}
10^{-3}
10^{-4}
10^{-5}
10^{-6}
44-60A (EXP6)
8-20A (EXP5)
2-10A (EXP13)
1-8A (EXP4)
0.5-3A (EXP12)
0000
0400
0800
1200
1600
2000
2400
TIME (UT)


SOLRAD 11 X-RAY PHOTOMETER DATA FOR 781018
ENERGY FLUX - ERGS/SQ.CM/SEC
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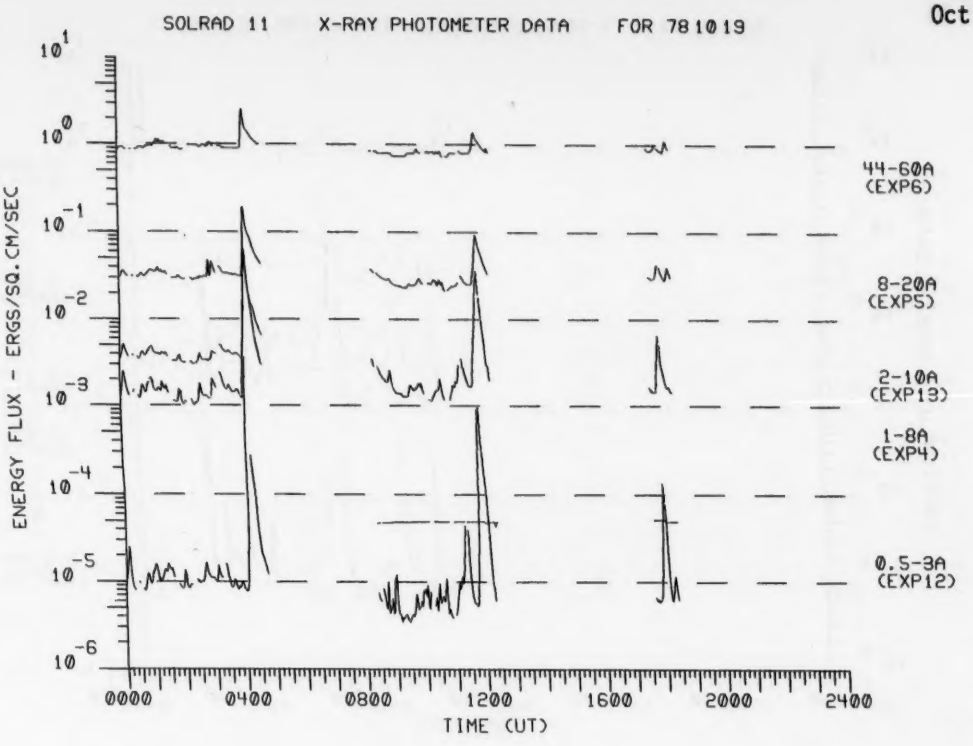
10^{0}
10^{-1}
10^{-2}
10^{-3}
10^{-4}
10^{-5}
10^{-6}
44-60A (EXP6)
8-20A (EXP5)
2-10A (EXP13)
1-8A (EXP4)
0.5-3A (EXP12)
0000
0400
0800
1200
1600
2000
2400
TIME (UT)


SOLRAD 11 X-RAY PHOTOMETER DATA FOR 781019
ENERGY FLUX - ERGS/SQ.CM/SEC
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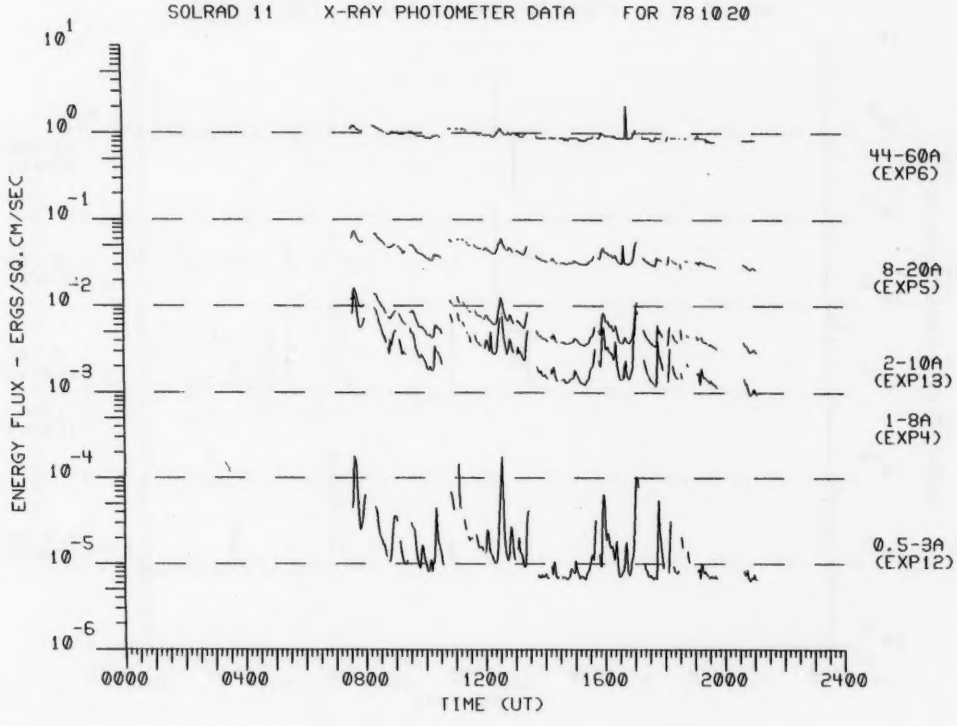
10^{0}
10^{-1}
10^{-2}
10^{-3}
10^{-4}
10^{-5}
10^{-6}
44-60A (EXP6)
8-20A (EXP5)
2-10A (EXP13)
1-8A (EXP4)
0.5-3A (EXP12)
0000
0400
0800
1200
1600
2000
2400
TIME (UT)


SOLRAD 11 X-RAY PHOTOMETER DATA FOR 781020
ENERGY FLUX - ERGS/SQ.CM/SEC
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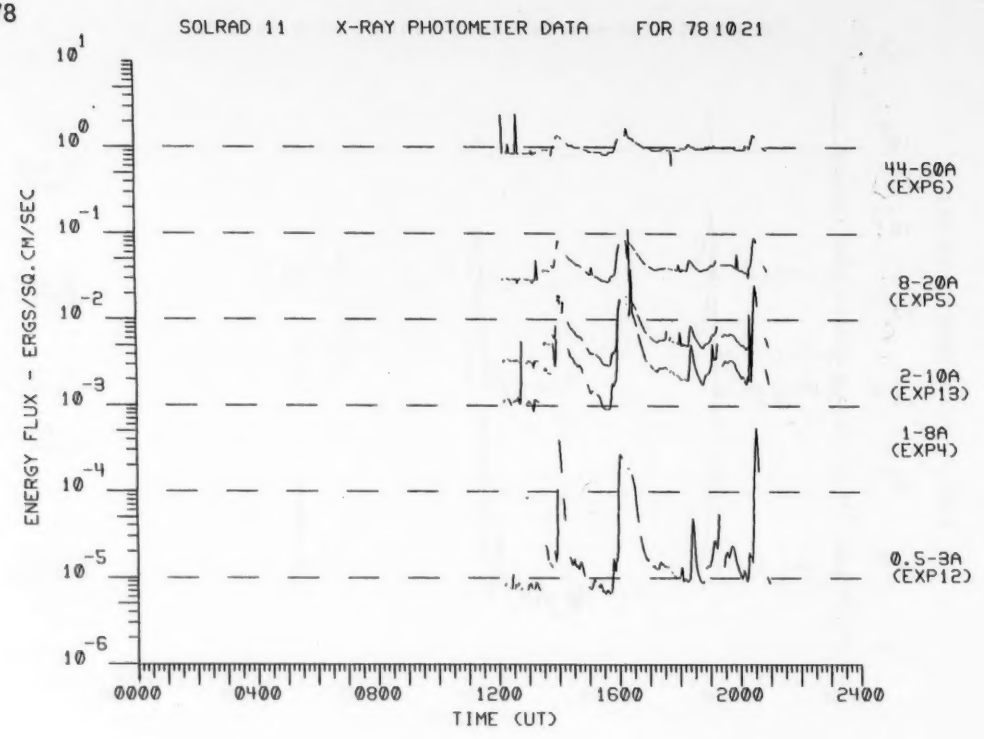
10^{0}
10^{-1}
10^{-2}
10^{-3}
10^{-4}
10^{-5}
10^{-6}
44-60A (EXP6)
8-20A (EXP5)
2-10A (EXP13)
1-8A (EXP4)
0.5-3A (EXP12)
0000
0400
0800
1200
1600
2000
2400
TIME (UT)


SOLRAD 11 X-RAY PHOTOMETER DATA FOR 781021
ENERGY FLUX - ERGS/SQ.CM/SEC
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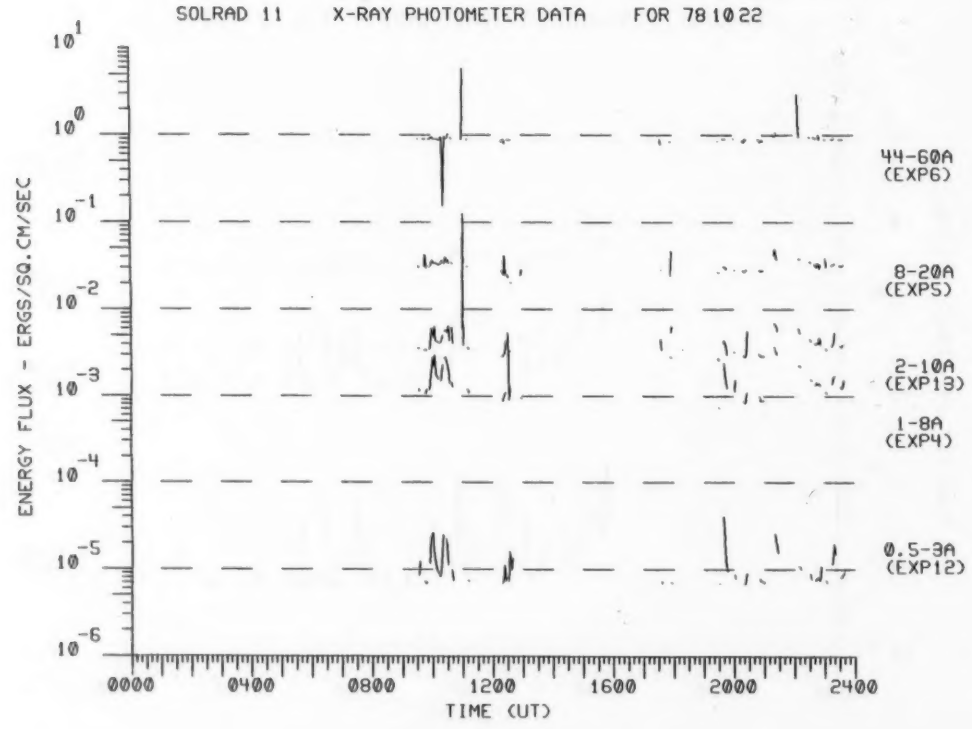
10^{0}
10^{-1}
10^{-2}
10^{-3}
10^{-4}
10^{-5}
10^{-6}
44-60A (EXP6)
8-20A (EXP5)
2-10A (EXP13)
1-8A (EXP4)
0.5-3A (EXP12)
0000
0400
0800
1200
1600
2000
2400
TIME (UT)


SOLRAD 11 X-RAY PHOTOMETER DATA FOR 781022
ENERGY FLUX - ERGS/SQ.CM/SEC
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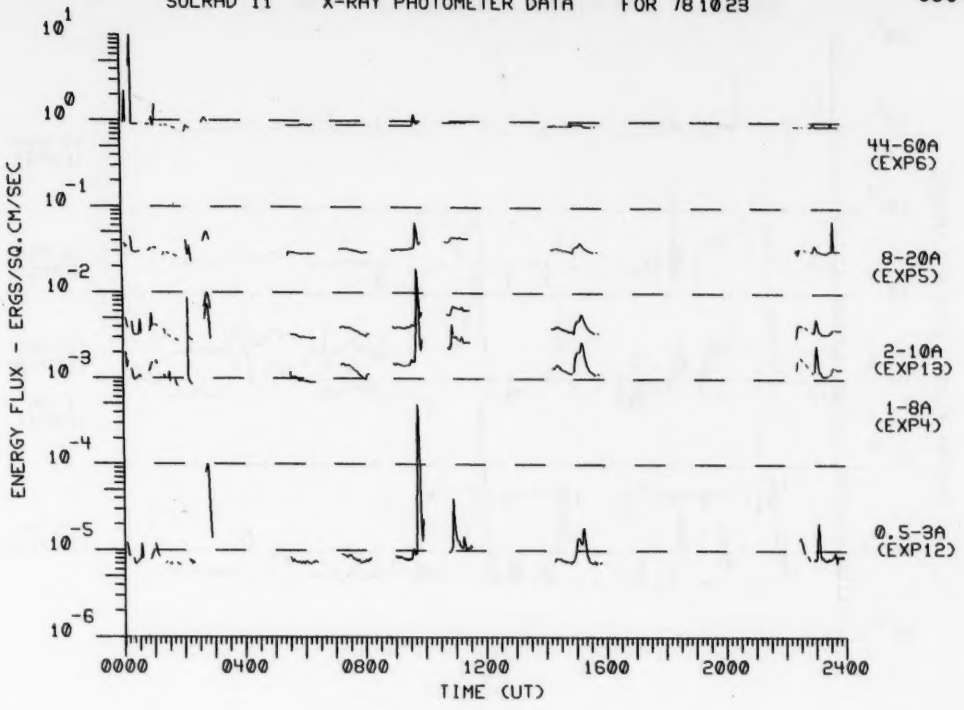
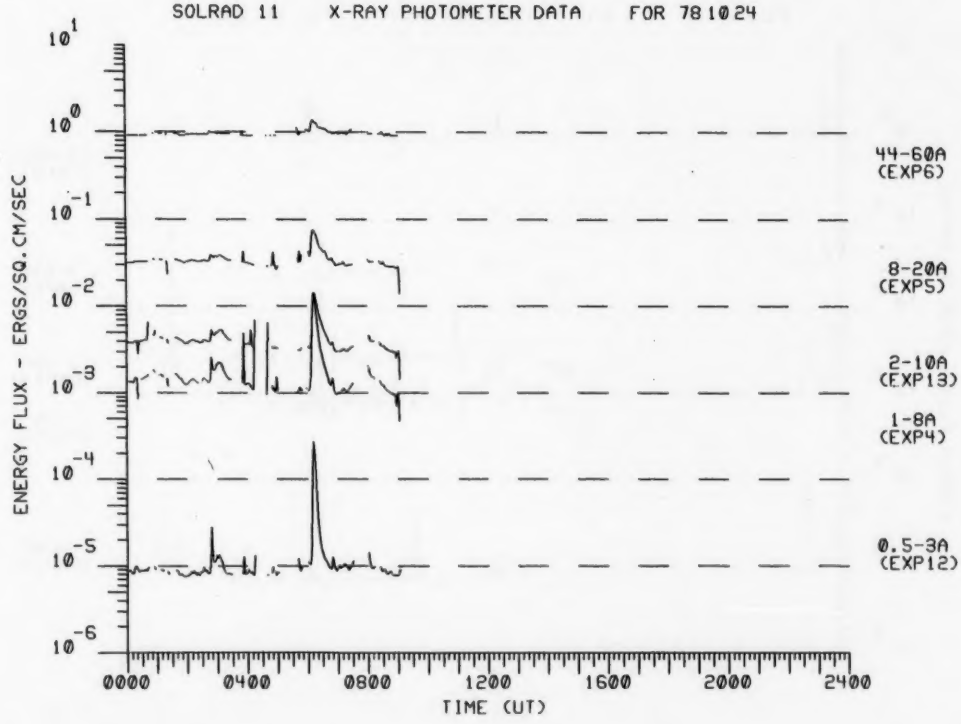
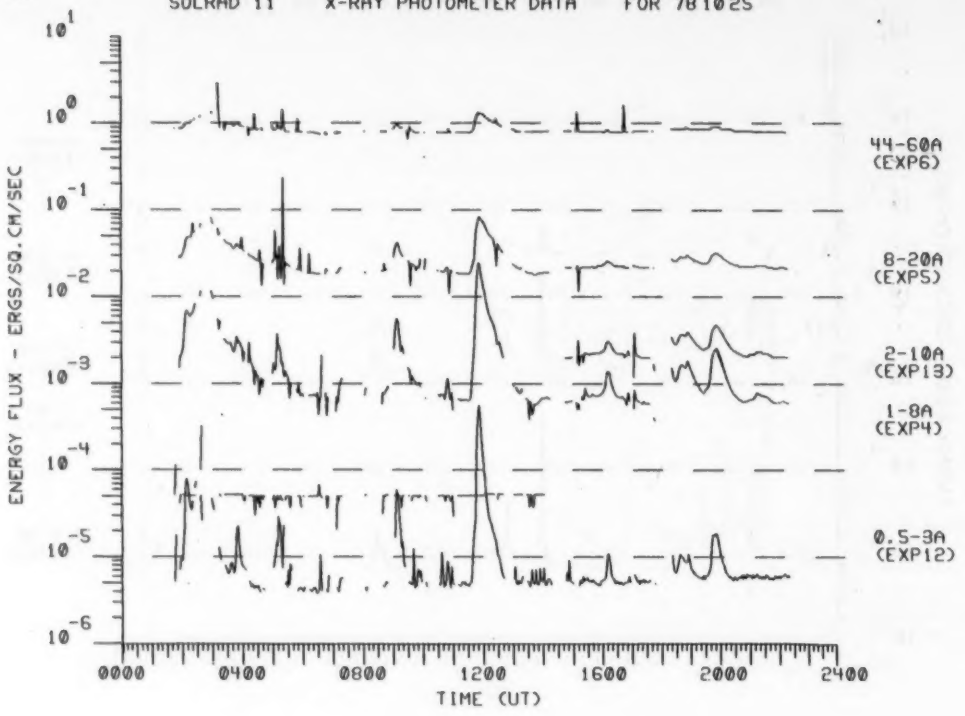
10^{0}
10^{-1}
10^{-2}
10^{-3}
10^{-4}
10^{-5}
10^{-6}
44-60A (EXP6)
8-20A (EXP5)
2-10A (EXP13)
1-8A (EXP4)
0.5-3A (EXP12)
0000
0400
0800
1200
1600
2000
2400
TIME (UT)

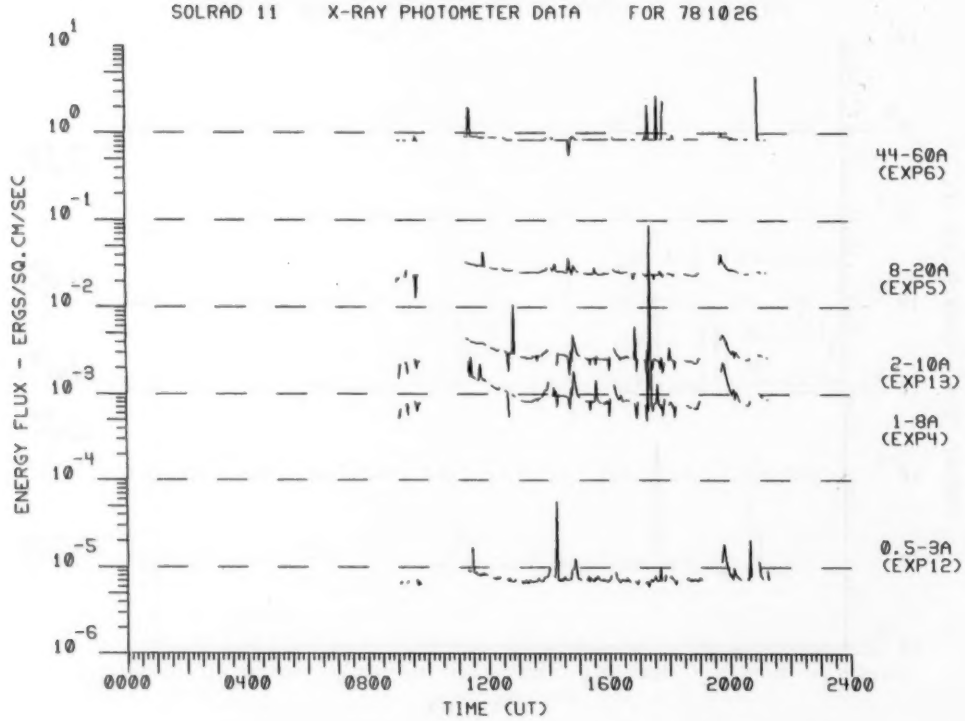
SOLRAD 11 X-RAY PHOTOMETER DATA FOR 781023

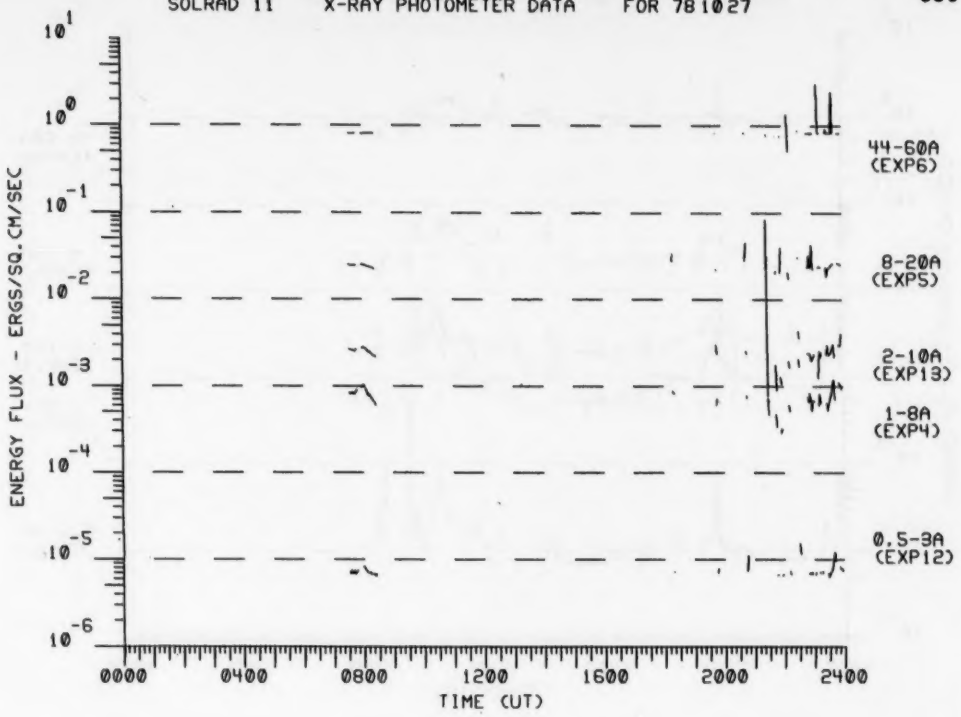


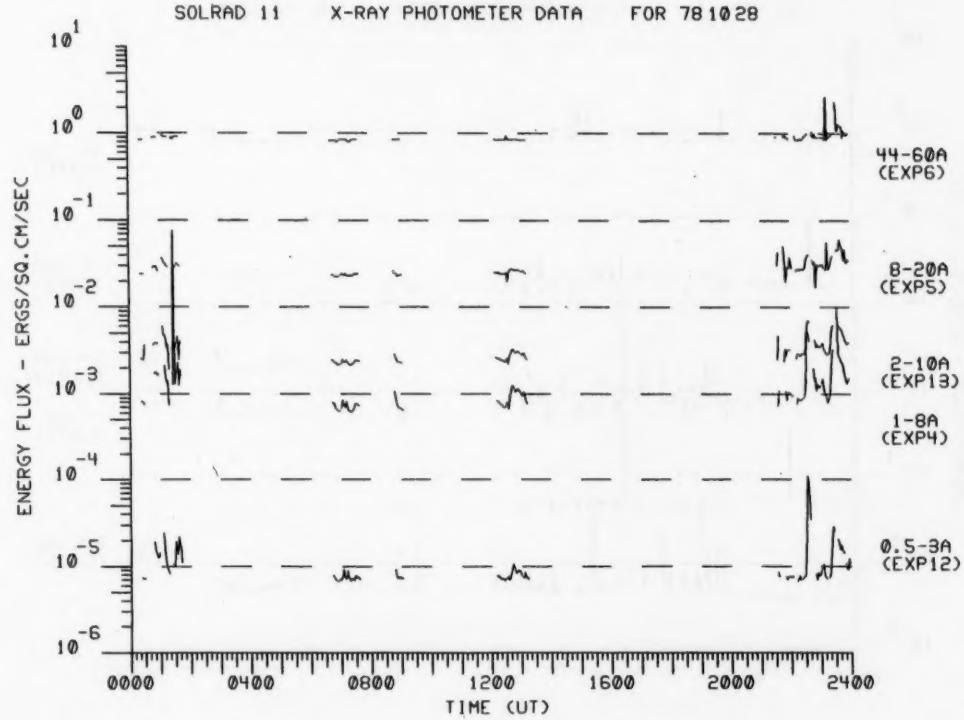
SOLRAD 11 X-RAY PHOTOMETER DATA FOR 781024

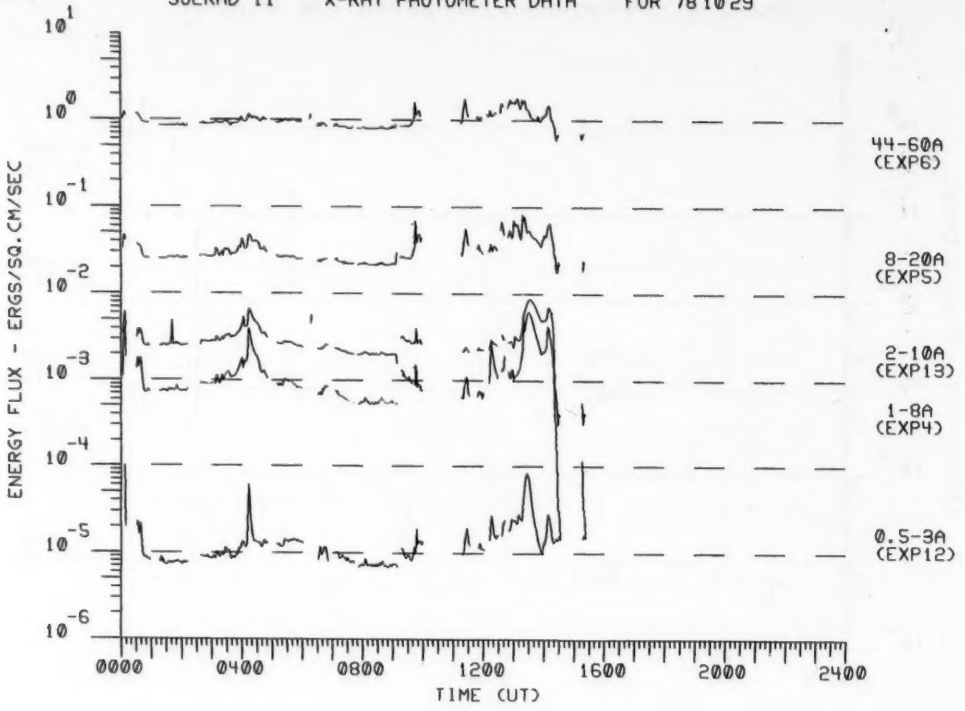


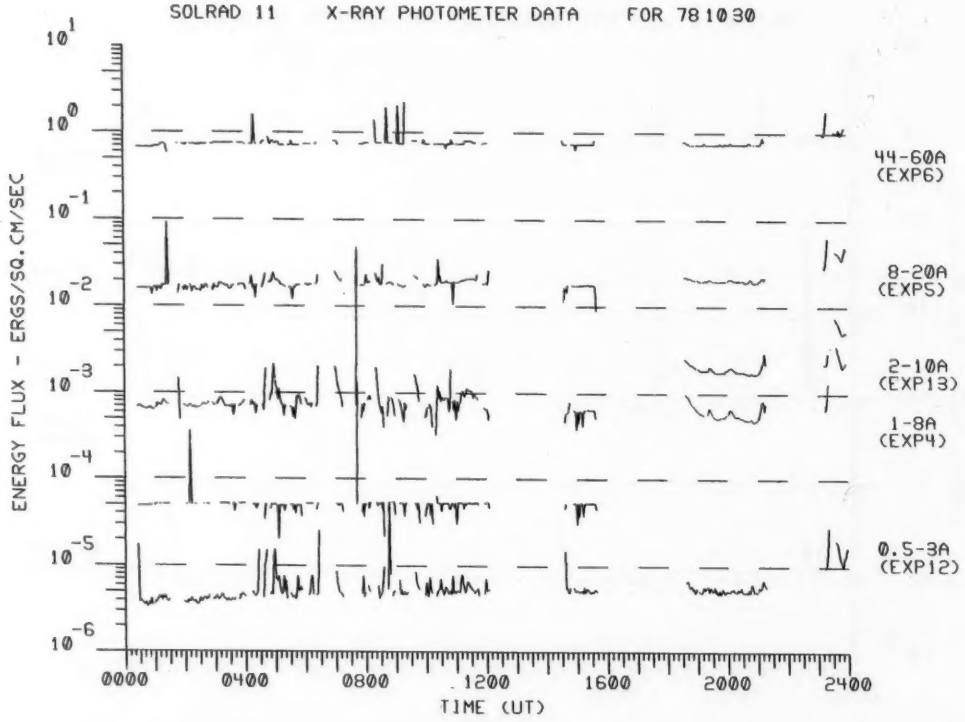

SOLRAD 11 X-RAY PHOTOMETER DATA FOR 781025
ENERGY FLUX - ERGS/SQ.CM/SEC
10^{1}
10^{0}
10^{-1}
10^{-2}
10^{-3}
10^{-4}
10^{-5}
10^{-6}
44-60A (EXP6)
8-20A (EXP5)
2-10A (EXP13)
1-8A (EXP4)
0.5-3A (EXP12)
0000
0400
0800
1200
1600
2000
2400
TIME (UT)


SOLRAD 11 X-RAY PHOTOMETER DATA FOR 781026
ENERGY FLUX - ERGS/SQ.CM/SEC
10^{1}
10^{0}
10^{-1}
10^{-2}
10^{-3}
10^{-4}
10^{-5}
10^{-6}
44-60A (EXP6)
8-20A (EXP5)
2-10A (EXP13)
1-8A (EXP4)
0.5-3A (EXP12)
0000
0400
0800
1200
1600
2000
2400
TIME (UT)

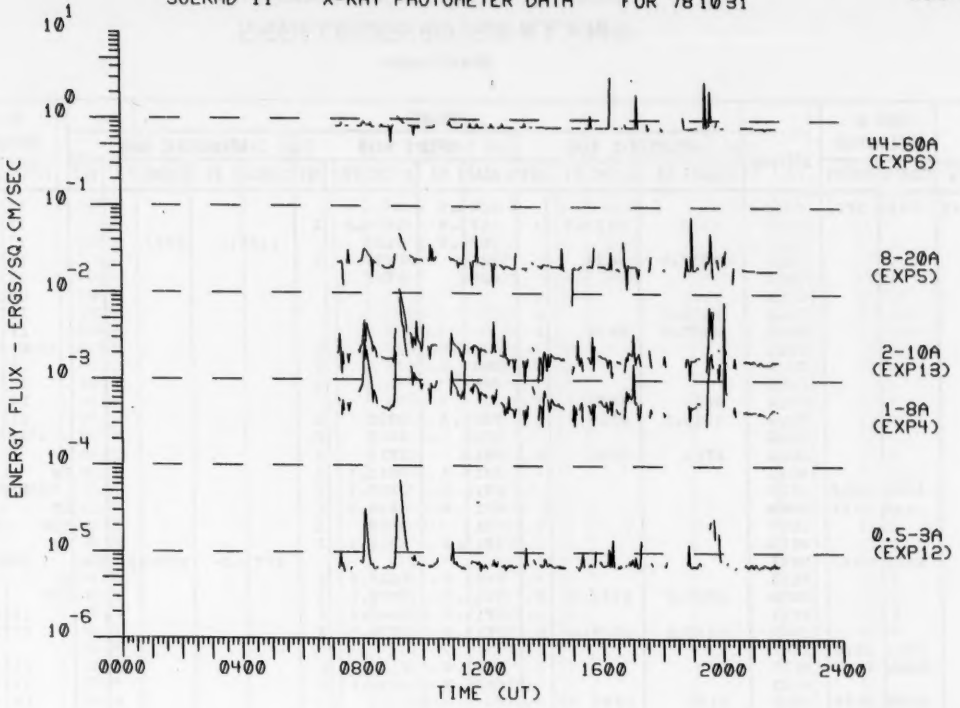

SOLRAD 11 X-RAY PHOTOMETER DATA FOR 781027
ENERGY FLUX - ERGS/SQ.CM/SEC
10^{1}
10^{0}
10^{-1}
10^{-2}
10^{-3}
10^{-4}
10^{-5}
10^{-6}
44-60A (EXP6)
8-20A (EXP5)
2-10A (EXP13)
1-8A (EXP4)
0.5-3A (EXP12)
0000
0400
0800
1200
1600
2000
2400
TIME (UT)


SOLRAD 11 X-RAY PHOTOMETER DATA FOR 781028
ENERGY FLUX - ERGS/SQ.CM/SEC
10^{1}
10^{0}
10^{-1}
10^{-2}
10^{-3}
10^{-4}
10^{-5}
10^{-6}
44-60A (EXP6)
8-20A (EXP5)
2-10A (EXP13)
1-8A (EXP4)
0.5-3A (EXP12)
0000
0400
0800
1200
1600
2000
2400
TIME (UT)


SOLRAD 11 X-RAY PHOTOMETER DATA FOR 781029
ENERGY FLUX - ERGS/SQ.CM/SEC
10^{1}
10^{0}
10^{-1}
10^{-2}
10^{-3}
10^{-4}
10^{-5}
10^{-6}
44-60A (EXP6)
8-20A (EXP5)
2-10A (EXP13)
1-8A (EXP4)
0.5-3A (EXP12)
0000
0400
0800
1200
1600
2000
2400
TIME (UT)


SOLRAD 11 X-RAY PHOTOMETER DATA FOR 781030
ENERGY FLUX - ERGS/SQ.CM/SEC
10^{1}
10^{0}
10^{-1}
10^{-2}
10^{-3}
10^{-4}
10^{-5}
10^{-6}
44-60A (EXP6)
8-20A (EXP5)
2-10A (EXP13)
1-8A (EXP4)
0.5-3A (EXP12)
0000
0400
0800
1200
1600
2000
2400
TIME (UT)

SOLRAD 11 X-RAY PHOTOMETER DATA FOR 781031



SOLAR RADIO EMISSION
SPECTRAL OBSERVATIONS

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OCT 1978	TIMES OF OBSERVATION START UT	TIMES OF OBSERVATION END UT	STATION	EVENTS DECIMETRIC BAND START UT	DECIMETRIC BAND END UT	DECIMETRIC BAND INT	METRIC BAND START UT	METRIC BAND END UT	METRIC BAND INT	DEKAMETRIC BAND START UT	DEKAMETRIC BAND END UT	DEKAMETRIC BAND INT	SPECTRAL TYPE
01	0000	0722	CULG				0054.5						IIIB,W
			CULG	0123	0123.5	1	0123.5	0124.5	1				IIIG
			CULG				0126.5	0127		0126.5	0127		IIIB,W
			CULG	0237.5	0239	1	0238	0238.5	1				IIIG
			CULG				0244	0722					IIIN,W
			CULG	0427		1							UNCLF
			CULG	0435.5		1							IIIG
			CULG	0437.5	0438	1							IIIG
			CULG				0456.5		1				IIIB
			CULG				0457.5		1				IIIB
			CULG				0458		1				IIIB
			CULG	0705	0722	1							IN
			CULG	0715.5	0720	1	0715.5	0722	1				IIIS
			CULG				0715	0722	2				IS
			CULG	0715	0722	1	0718	0722	3				IV
			WEIS				0716.0	0811.0	3				IV
	0550	0942	WEIS				0716.0	0720.3	3				IIIG
	0805	1715	DURN				0718.9	0734.0	2				II
			CULG				0718	0722	3				IIH B
			WEIS				0719.0	0712.0	3				IV
	0000	0943	MANI							0721.2-	0735.2	2	CONT
			WEIS				0750.0	0807.0	2				II
			DURN	0804.3	0832.2	3	0740.5	0850.5	3				IVF
			WEIS				0815.0	0942.0	2				IIIS
			DURN	0832.2	0834.6	3	0832.2	0834.6	3				IIIGG
	1044	2000	SGMR										
	1004	1627	WEIS				1122.4	1122.5	1				IIIB
			WEIS				1135.9	1136.1	2				IIIB
	2022	2400	CULG	2131	2247								IN,W
	2146	2400	MANI										
02	0000	0937	MANI										
	0000	0722	CULG				0210.5						IIIB,W
	0630	1716	DURN										
	0558	1627	WEIS				0703.3	0704.2	2				IIIG
			CULG	0703	0704.5	1	0703	0704.5	2				IIIG,U
			WEIS				0715.5	0716.5	1				IIIG
			CULG				0715	0716.5	1				IIIG
			WEIS				0729.4	0729.8	1				IIIG
			WEIS				0737.7	0738.0	2				IIIG,U
	1045	2000	SGMR										
	2022	2400	CULG				2030		1				UNCLF
	2145	2400	MANI										
03	0000	0923	MANI										
	0000	0721	CULG				0232.5						IIIB,W
			CULG				0347.5	0348					IIIB,W
			CULG				0426	0427.5	1				IIIG
			CULG				0503						IIIB,W
			CULG				0537						IIIB,W
	0620	1614	DURN										
	0558	0832	WEIS				0759.5	0810.0	2				IIH
	1046	2000	SGMR				1319.5	1320.0	1				IIIG
	1319	1320	WEIS				1319.7	1320.6	2				IIIG
	2021	2400	CULG				2130	2400					IIIN,W
			CULG				2135.5	2136.5	1				UNCLF
			CULG				2142.5	2145	2	2142.5	2144.5	2	IIIGG,V
	2146	2400	MANI										
			CULG				2224	2224.5	1				IIIG
			CULG	2226	2305	1							IS
04	0000	0928	MANI										
	0000	0720	CULG	0014	0041								IN,W
			CULG				0026		1				IIIB
			CULG				0100	0242					IN,W
			CULG				0109.5	0111.5					IIIG,W
			CULG				0111.5	0120.5	2	0111.5	0115.5	2	IIIGG
			CULG				0249	0300					IIIN,W
			CULG				0255	0255.5	2				IIIB
			CULG	0400	0555								IN,W

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04			CULG				0416	0417	2	0416.5	0417.5	2	IIIG,U,W
			CULG				0418		2				IIIE
			CULG				0420	0432	1	0422.5	0429.5	1	IIIGG
			CULG				0423	0425	2	0423	0425	1	IIIGG
			CULG				0429	0430	2	0429	0430	1	IIIG
			CULG				0531		1				UNCLF
			CULG				0532.5	0533					IIIB,W
			CULG				0631.5	0634					IIIG,W
	0559	1622	WEIS				0823.2	0824.1	2				IIIG
			WEIS				0829.0	0829.3	2				IIIB
			WEIS				0836.1	0836.5	2				IIIG
			WEIS				0838.9	0839.3	3				IIIG
			WEIS				1014.7	1018.0	3				IIIGG
	0625	1700	DURN				1015.3	1015.9	1				IIIG
			WEIS				1021.1	1021.3	2				IIIG
			WEIS				1051.0	1101.3	3				IIIGG,U
	1047	2000	SGMR				1052.2	1053.2	1				IIIG
			SGMR				1128.8	2000.00	1				IIIS
			WEIS				1129.7	1131.9	3				IIIG
			WEIS				1135.4	1138.6	2				IIIG
			WEIS				1223.8	1225.7	1				IIIG
			WEIS				1314.4	1315.6	1				IIIG
			WEIS				1416.3	1416.6	1				IIIG
			WEIS				1425.5	1425.6	1				IIIB
			WEIS				1502.5	1505.2	2				IIIG
			SGMR				1503.9	1506.0	3				V
			WEIS				1525.5	1529.8	3				IIIGG,RS
			SGMR				1525.8	1532.5	3				V
			DURN				1526.1	1532.4	2				IIIGG
			WEIS				1532.3	1536.4	3				IIIG
			WEIS				1538.6	1545.0	1				IIH ARM.
	2023	2400	CULG				2031	2152	1				IIIS
			CULG	2033.5	2034	1	2033.5	2034	1				IIIG
			CULG				2038	2039	2				IIIG,V
			CULG				2104.5	2106	2				IIIG
			CULG				2108	2109	2				IIIG
			CULG				2142	2143.5	2				IIIG
	2143	2400	MANI										
			CULG				2146	2146.5	2				IIIG
			CULG				2251	2400					IIIN,W
			CULG				2327.5	2328	2				IIIG
05	0000	0721	CULG				0000	0122					IIIN,W
			CULG				0003.5	0004	2				IIIG
			CULG				0024.5	0026	2	0025	0026	1	IIIG
			CULG				0122.5	0230	1				IIIS
			CULG				0125.5	0131	2	0130	0131	1	IIIG
			CULG	0136.5	0138.5	2	0136.5	0137.5	1				IIIG
			CULG				0142.5	0143	1	0142.5	0143	1	IIIG
			CULG				0144	0203					IS,W
			CULG	0207.5	0209.5	3	0207	0209.5	3	0207.5	0208.5	3	IIIGG,V
	0000	0925	MANI							0207.5	0208.8	2	III
			CULG				0212	0220.5	2	0212.5	0219.5	2	IIIGG
			MANI							0215.1	0215.3	1	III
			CULG	0228.5	0229	2	0228.5	0229	3	0228.5	0229	3	IIIG
			CULG				0626	0716					IIIN,W
			CULG	0631.5	0635.5	3	0631	0634	3	0632	0632.5	2	IIIGG,V
			MANI							0631.5	0632.8	1	III
			CULG				0633	0658	2				II
	0635	1710	DURN				0635 E	0636	1				IOC
	0707	1002	WEIS				0742.7	0743.2	1				IIIG
			WEIS				0910.1	0910.2	1				IIIB
			WEIS				0913.3	0914.2	1				IIIG
			WEIS				0940.4	0941.5	2				IIIG
			WEIS				0944.8	0946.9	1				IIIG
			WEIS				0949.8	0951.0	2				IIIG
			DURN				0950.1	0950.8	2				IIIG
			WEIS				0953.5	1000.0	1				IIIG
	1012	1622	WEIS				1025.9	1026.3	2				IIIG
			WEIS				1112.4	1125.0	2				IIIGG

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05	1049	2033	SGMR				1114.0	1115.0	1				V
			SGMR				1122.8	1123.5	1				III
			WEIS				1147.5	1150.2	1				IIIG
			WEIS				1226.1	1230.5	2				IIIG
			OURN	1226.1	1226.4	1							IIIG
			OURN	1228.1	1228.3	3	1227.8	1228.3	3				IIIG
			WEIS				1242.5	1242.7	1				IIIB
			WEIS				1303.0	1304.9	3				IIIG
			SGMR				1303.2	1305.5	3				V
			OURN				1303.5	1304.5	3				IIIG,V
			WEIS				1402.5	1415.0	2				IVF
			SGMR				1403.0	1732.0	2				IIIS
			OURN	1403.3	1409.0	3	1403.3	1413.0	3				IVF ,F
			WEIS				1426.3	1426.6	1				IIIG
			SGMR				1943.0	1952.4	2				IIIG
			CULG				2021	2125					IIIS,W
	2021	2400	CULG				2021	2131	1				IS
			CULG				2121	2121.5	1				IIIG
			CULG	2133.5	2134	1	2133.5	2134	1				IIIG
	2145	2400	MANI										
			CULG				2235		2				IIIB
			CULG				2236.5	2237	1				IIIG
			CULG				2251	2252					IIIG,W
			CULG				2310.5	2313	1				IIIG
			CULG				2312	2312.5	2				IIIB
			CULG	2317			2317	2317.5					IIIG,W
			CULG	2324.5	2326		2324.5	2326					IIIG,W
06	0000	0120	MANI										
	0000	0721	CULG				0045	0107	2				IIIN
			CULG	0046.5	0049	2							IIIGG
			CULG	0106	0106.5	1	0106	0106.5	1				IIIG
			CULG				0151	0151.5					IIIG,W
	0126	0926	MANI							0214.5	0214.8	1	III
			CULG				0214	0214.5	3				IIIG,V
			CULG				0219	0218.5	1				IIIG
			CULG				0246.5	0247					IIIB,W,U
			CULG				0338	0338.5					UNCLF,W
			CULG				0401						IIIB,W
			CULG				0406.5						IIIB,W
			CULG				0408.5		1				IIIB
			CULG				0453	0517	2				IIIS
			MANI							0454.5	0455.5	1	IIIG
			CULG	0507.5	0508	1	0507.5	0508	2				IIIG
			CULG				0521	0555					IIIN,W
			CULG				0547.5		2				IIIB
			CULG				0553	0554	2				IIIG
	0602	1620	WEIS				0712.8	0713.1	1				IIIB
			CULG				0713		1				IIIB
			WEIS				0946.9	0947.0	1				IIIB
			WEIS				0949.3	0949.4	1				IIIB
			WEIS				0951.5	0951.7	2				IIIB
	0630	1710	OURN				0951.5	0951.7	3				IIIG
			WEIS				1003.2	1003.5	1				IIIG
			WEIS				1010.5	1011.6	1				IIIG
			WEIS				1016.8	1016.9	1				IIIB
			WEIS				1023.8	1025.1	2				IIIG
			WEIS				1027.0	1027.3	1				IIIG
			WEIS				1031.3	1032.2	1				IIIG
			WEIS				1242.8	1243.3	1				IIIG
			WEIS				1330.6	1330.9	1				IIIG
			WEIS				1424.3	1425.0	1				IIIG
			WEIS				1501.7	1502.0	2				IIIB
			WEIS				1531.0	1532.7	2				IIIG
			WEIS				1537.4	1537.5	1				IIIB
			WEIS	1543.5	1544.6	2							IIIG
			OURN	1543.8	1544.6	3	1543.8	1544.6	1				IIIGG
	1050	2000	SGMR				1654.0	1831.0	2				IIIS
	2021	2400	CULG				2031.5						IIIB,W
			CULG	2119	2120.5	1							IIIG

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06	2145	2400	MANI										
			CULG	2319	2320.5	2							IIIG
			CULG	2354	2354.5	1							IIIG
07	0000	0924	MANI										
	0000	0720	CULG	0026.5	0027	2							FAST DRIFT
			CULG	0047.5	0452.5	2							N,FASTDRIF
			CULG				0105.5	0110.5	2				II
			CULG				0110.5	0114					IIW
			CULG	0335	0337.5	2	0337	0337.5	1				IIIG
			CULG	0408	0409.5	1							IIIG
			CULG	0505	0505.5	1							IIIG
			CULG	0506.5	0508	2	0506.5	0508	1				IIIGG
			CULG				0642.5	0643					IIIG,W
			CULG				0644.5	0645					IIIB,W
	0630	1643	DURN				0800.0	1643 D	1				I
	0603	0919	WEIS				0830.5	0830.6	1				IIIB
	1051	2000	SGMR										
			DURN	1206.1	1206.3	3	1206.1	1206.3	3				IIIG
			CULG				2020	2400	1				IIIS
	2020	2400	CULG	2020	2400	1	2020	2400	1				IS
	2143	2400	MANI										
			CULG				2211	2211.5	2	2211	2211.5	2	IIIB
08	0000	0720	CULG	0000	0610	1	0000	0630	1				IS
			CULG				0000	0200					IIIS,W
			CULG				0200	0705					IIIN,W
			CULG	0342	0342.5	2	0342	0343	1	0342.5	0343	1	IIIG
			CULG				0551	0606					IIIS,W
	0600	1100	DURN				0600	1100 D	2				IDC
			CULG	0610	0720		0630	0701					IS,W
			DURN	0834.8	0836.4	1							DCIM
			DURN				0834.8	0843.0	3				II
	0604	1616	WEIS				0834.9	0837.5	3				IIIG/V
	0000	0925	MANI							0835.0	0835.8	1	III
			WEIS				0837.3	0852.5	3				IIH ARM.
	1052	2000	SGMR										
			WEIS				1200.5	1201.0	1				IIIG
	1404	1639	DURN										
	2020	2400	CULG				2026		1				UNCLF,RS
	2156	2400	MANI										
			CULG	2219			2216.5	2219					IIIG,W
			CULG	2307	2308		2307	2307.5					IIIG,W
			CULG				2342						IIIB,W
09	0000	0537	CULG							0000	0035	1	S.W.F.
	0000	0923	MANI										
			CULG				0011						IIIB,W
			CULG	0024	0026	2	0024.5	0027.5	3	0025.5	0027.5	3	IIIGG,V
			CULG	0025	0030	1	0027	0042.5	1				IV
			CULG	0028.5	0029	2	0028.5	0042.5	2				II
			CULG	0451	0522								IN,W
			CULG				0510	0537	1				IS
			CULG				0536.5	0537	1				IIIG
	0602	1438	DURN										
			DURN				0609.6	0609.7	3				III
			DURN				0727.4	0728.1	2				IIIG
			DURN	0734.6	0734.6	2	0734.6	0734.6	2				III
			DURN				0830.0						IDC
			DURN				0830.2	0830.2	3				III
	0605	0945	WEIS				0830.2	0830.3	1				IIIG
			WEIS				0832.5	0832.6	1				IIIB
	0950	1605	WEIS				1033.5	1033.9	1				IIIG
			WEIS	1130.7	1131.3	2							IIIG
			DURN	1130.7	1131.2	3							IIIGG
			DURN	1206.3	1207.2	3	1206.3	1207.2	3				IIIG
			WEIS				1206.3	1207.2	1				IIIG,RS
			WEIS				1325.8	1326.7	2				IIIG
			DURN				1325.8	1325.9	2				III
	1053	2100	SGMR				1406.8	1507.2	1				III

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09			DURN				1410.2	1410.3	3				IIIG
			WEIS				1410.3	1410.4	1				IIIG
			WEIS				1414.2	1414.3	1				IIIG
			DURN				1416.1	1416.1	1				III
			WEIS				1416.2	1416.3	1				IIIG
			SGMR				1950.0	2005.0	2				II
			SGMR				2010.9	2100.0D	2				CONT
			SGMR				2012.0	2015.3	2				II
	2036	2400	CULG				2036	2117	2				IS,C
			CULG				2117	2400	1				IS
	2144	2400	MANI										
10	0000	0900	MANI										
	0000	0719	CULG				0000	0129	1				IS
			CULG	0031	0031.5	1							FAST DRIFT
			CULG				0031	0032.5	2				II
			CULG				0129	0156					IS,W
			CULG				0150	0150.5	1				IIIG
			CULG				0233.5	0234					IIIG,W
			CULG				0417.5	0418					IIIG,W
			CULG				0419.5	0420	1				IIIG
			CULG	0422	0426		0424	0526					IS,W
			CULG				0427						IIIB,W
			CULG				0434	0434.5					IIIG,W
			CULG	0445.5		1	0444.5	0446	1				IIIG,U
			CULG				0447	0448					IIIG,W
			CULG				0511.5						IIIB,W
			CULG				0526	0654	1				IS
	0603	1634	DURN				0603 E	1100	1				I
			CULG				0653.5	0654					IIIG,W
			DURN				0936.5	0936.5	1				III
	0607	1612	WEIS				0936.7	0936.8	1				IIIB
	1054	2000	SGMR										
			DURN	1122.7	1125.3	2							IIIGG
			DURN				1624.6	1624.6	1				III
	2020	2400	CULG	2020	2037								IS,W
			CULG				2020	2057	1				IS
			CULG				2057	2400	1				IN
	2155	2400	MANI										
			CULG				2243	2251					IIIS,W
			CULG				2251	2253	1				IIIS
11	0000	0920	MANI										
	0000	0719	CULG				0148	0148.5	2	0148	0148.5	2	IIIB
			CULG				0155	0156	1				IIIB
			CULG				0333.5	0337					IIIGG,W
			CULG				0336	0337	1				IIIG
			CULG				0416						IIIB,W
			CULG	0417	0438		0415	0443					IN,W
			CULG	0438	0648	1	0443	0520	1				IS
			CULG				0439	0453					IIIS,W
			CULG				0520	0719	1				IS,C
	0605	1631	DURN				0605 E	1450	1				IDC
	0609	0945	WEIS				0611.0	0710.0	2				IIIS
			WEIS				0626.5	0810.0	1				IS
			WEIS				0841.0	0858.0	3				IIH 8 HARM
	1001	1608	WEIS				1140.6	1142.5	3				IIIG,U
	1055	2000	SGMR				1141.8	1142.1	1				III
			WEIS				1146.4	1146.8	1				IIIG
			CULG				2019.5	2021	1				IIIG
			CULG				2019	2218	1				IN
	2019	2400	CULG	2019	2400								IN,W
			CULG				2020	2020.5	1				IIIG
			CULG				2050	2050.5	1				IIIG
			CULG				2052.5	2053.5					IIIG,W
	2156	2400	MANI										
			CULG				2218	2400					IS,W
			CULG	2321	2322	1							FAST DRIFT
12	0000	0718	CULG	0000	0143								IN,W

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12			CULG				0000	0150					IS,W
	0000	0924	MANI										
			CULG				0009						IIIB,W
			CULG				0037.5	0038.5	2	0038	0038.5	1	IIIG
			CULG							0130	0330	1	S.W.F.
			CULG				0131	0131.5					IIIG,W
			CULG	0143	0154	1							IS
			CULG				0146.5	0318.5					IIIS,W
			CULG				0150	0310	1				IS,DC,C
			CULG				0310	0718					IS,C,W
			CULG				0336	0337.5	1				IIIGG
			CULG				0402	0658					IIIN,W
			CULG	0444	0444.5	2	0444	0444.5	2				IIIG,U
			CULG	0521		1	0521	0521.5	2				IIIG
			CULG	0605.5	0606.5	1	0605	0606.5	3	0605.5	0606	1	IIIGG
	0606	1631	DURN				0606 E	1300	1				IDC
			CULG				0607	0718	1				IS,DC
			CULG				0608.5		1				IIIB
			CULG				0612	0614.5	1				IIIGG
	0612	1606	WEIS				0640.4	0640.5	1				IIIB
			WEIS				0643.9	0644.0	2				IIIB
			CULG				0643		1				IIIB
			CULG				0658						IIIB,W
			CULG				0700	0718	1				IIIS
			WEIS				0701.1	0705.7	2				IIIGG
			CULG				0702.5	0705.5	2				IIIGG
			WEIS				0721.5	0721.6	1				IIIG
			WEIS				0819.6	0820.0	2				IIIG
			WEIS				0920.0	0925.0	3				IIIG
			WEIS				1007.2	1007.3	2				IIIB
	1057	2000	SGMR										
			WEIS				1110.9	1112.3	2				IIIG
			WEIS				1202.3	1202.5	2				IIIB
			WEIS				1204.0	1204.2	2				IIIB
			WEIS				1231.2	1232.7	2				IIIG
	2019	2400	CULG				2019	2400	1				IS
	2155	2400	MANI										
13	0000	0905	MANI										
	0000	0718	CULG				0000	0600	1				IS
			CULG	0107.5	0108	1	0107.5	0108	2	0107.5	0108	1	IIIG
			CULG				0113.5	0123	1				IS,DC
			CULG				0117.5						IIIB,W
			CULG				0131		2	0131.5		1	IIIB
			CULG				0207	0718					IIIN,W
			CULG	0540	0718								IS,W
			CULG	0552	0552.5	1	0552	0552.5	1				IIIG
			CULG				0600	0718	1				IS
	0608	1630	DURN				0608 E	1630 D	1				IDC
			DURN	0644.4	0644.4	3	0644.4	0644.4	1				IIIG
			CULG	0644.5		1							IIIB
	0613	1018	WEIS	0644.5	0644.6	2							IIIB
			CULG				0645.5		1				IIIB
			WEIS				0645.7	0645.7	2				IIIB
			DURN	1235.2	1237.7	3	1237.1	1237.7	3				IIIG
	1028	1604	WEIS				1236.0	1241.0	2				IIIG
	1058	2000	SGMR				1236.2	1240.2	2				IIIG
			DURN	1237.0	1244	3	1237.0	1244	3				II
			DURN	1237.0	1247	3	1237	1247	3				IV
			WEIS				1237.3	1604.0	3				IV
			SGMR				1240.2	1251.0	3				IV
			SGMR				1247.2	2000.0D	2				CONT
			DURN	1252.4	1420	3	1255.3	1420	3				IIIG,N
			DURN				1525.4	1525.6	3				IIIG
			DURN	1535.8	1550.5	3	1535.8	1544	3				IIIG,N
	2018	2400	CULG				2018	2049	1				IIIS
			CULG	2018	2140								IS,W
			CULG				2018	2400	1				IS,C,DC
			CULG				2049	2400					IIIS,W
			CULG	2140	2400	1							IS

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13			CULG				2146	2146.5	2	2146	2146.5	2	IIIB
	2151	2400	MANI										
			CULG				2221	2221.5	1	2221	2221.5	1	IIIG
			CULG				2229.5		1				IIIB
			CULG	2321.5		1	2321.5		1				IIIB,U
			CULG	2341.5		1	2341	2341.5	1				IIIG
			CULG				2344.5	2345.5	1	2345	2345.5	1	IIIG
14			CULG				0000	0325	1				IS,C,DC
	0000	0717	CULG				0000	0717					IIIS,W
	0000	0900	MANI										
			CULG	0041	0712	1							IS
			CULG				0103	0104.5	2	0130.5	0104.5	2	IIIG,V
			CULG				0107	0107.5	2				IIIG
			CULG				0112	0710	1				IIIG,N
			CULG				0213	0213.5	2	0213	0213.5	1	IIIG
			CULG				0225.5	0226	2	0226	0226.5	1	IIIG
			CULG				0325	0717	1				IS,DC
			CULG				0330.5		1	0330.5		1	IIIB
			CULG				0424		1				RS,DP
			CULG	0515	0516.5	1							FAST DRIFT
			CULG				0526	0526.5	2				IIIG
			CULG				0529.5		2				IIIB
			CULG				0558.5	0655.5	1				IIIS,RS
	0608	0728	DURN				0608 E	0728 D	1				IDC
			DURN	0649.8	0651.6	3							IIIGG
			CULG				0655.5	0702	2				IIIG,RS
	0614	1602	WEIS				0655.5	1547.8	2				IIIN
	0811	1626	DURN				0811 E	1100	1				IDC
			WEIS				1039.3	1039.6	2				IIIG
			WEIS				1046.7	1047.1	2				IIIG
	2020	2400	CULG				2020	2107	1				IS
			CULG				2107	2400					IN,W
	2148	2400	MANI										
			CULG				2214.5						IIIB,W
			CULS							2333.5	2400	1	S.W.F.
			CULG	2334	2336	1							I
			CULG	2342.5	2345	1							I
			SGMR										
15	0000	0900	MANI										
	0000	0718	CULG							0000	0140	1	S.W.F.
			CULG				0001	0013.5	1				IS
			CULG				0007	0009	1				POSS. II
			CULG				0013	0718	1				IS,DC
			CULG				0037.5		2				IIIB
			CULG				0052	0053	1	0052	0053	1	IIIG
			CULG				0053	0053.5	2	0053	0053.5	2	IIIB
			CULG				0250						IIIB,W
			CULG				0511.5	0512	1				IIIB
			CULG	0541	0553	1							IS
			CULG				0555	0718					IIIN,W
	0609	1625	DURN										
			CULG				0649.5		1				IIIB
	0614	1058	WEIS				0649.5	0649.7	1				IIIB
			WEIS				0834.4	0836.4	3				IIIG
			WEIS				0900.7	0903.9	3				IIIGG
			DURN	0900.7	0902.9	2	0900.7	0902.9	3				IIIGG
			WEIS				0937.0	0941.1	2				IIIG
			WEIS				1016.2	1018.1	1				IIIG
			WEIS				1048.9	1049.4	2				IIIG
			WEIS				1057.4	1058.2	2				IIIG
			DURN				1105.9	1106.2	2				IIIG
	1113	1600	WEIS				1133.2	1336.3	2				IIIS
	1220	2000	SGMR										
			WEIS				1236.7	1236.8	1				IIIB
			WEIS				1421.3	1422.3	3				IIIG
			DURN	1607.9	1608.2	3							IIIG
			CULG				2018	2400					IIIN,W
	2018	2400	CULG	2023	2217	1	2018	2400	1				IS

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				DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND			
	START UT	END UT		START UT	END UT	INT	START UT	END UT	INT	START UT	END UT	INT	
27			CULG							2226		1	IIIB
28	0000	0716	CULG				0000	0540					IIIS,W
	0000	0900	MANI										
			CULG	0018	0716	1	0000	0556	1				IS
			CULG	0038.5	0039	2	0038.5	0039	2	0038.5	0039	2	IIIG
			CULG				0038	0128	1				IIIS
			CULG				0133.5			0133.5			IIIB,W
			CULG				0140			0140			IIIB,W
			CULG				0146.5		1	0146.5		1	IIIB
			CULG				0302		1	0302	0302.5	1	IIIB
			CULG	0423	0423.5	1	0423	0423.5	1				IIIG
			CULG				0540						IIIN,W
			CULG				0640		1				IIIG
			WEIS				0714.1	0714.6	2				IIIG
			CULG	0714	0714.5	1	0714	0714.5	2				IIIG,U
			DURN				0720 E	1610 D	1				IDC
	0720	1610	DURN				0734.0	0734.2	2				IIIG
	0637	0906	WEIS				0734.0	1429.0	1				IIIN
	0910	1525	WEIS				1050.6	1437.0	1				IN
	1116	2000	SGMR										
	2016	2400	CULG	2016	2041	1							IN
			CULG				2102	2400					IIIN,W
			CULG				2149.5		1				IIIB
			CULG				2149		1				IIIB
	2152	2400	MANI										
29	0000	0600	MANI										
	0000	0715	CULG				0000	0111					IIIN,W
			CULG	0034	0107								IN,W
			CULG				0226.5		1				IIIB
			CULG	0427	0450								IN,W
			CULG				0427	0429.5	1				IIIGG
			CULG				0628.5		1				IIIB
			CULG				0657		2				IIIB
	0642	1533	WEIS				0713.8	0814.3	2				IIIG
			CULG				0714		1				IIIB
	0720	1610	DURN										
			WEIS				0904.6	0904.8	1				IIIB
			WEIS				0907.3	0907.4	1				IIIB
			WEIS				0953.0	0953.1	1				IIIB
			WEIS				0956.3	0958.8	1				IIIG
			WEIS				1019.7	1020.0	1				IIIB
			WEIS				1048.7	1049.3	1				IIIG
			WEIS				1112.1	1112.7	1				IIIG
	1117	2000	SGMR										
			WEIS				1250.9	1256.3	1				IIIGG
			WEIS				1332.7	1333.1	1				IIIG
			WEIS				1455.3	1455.5	1				IIIB
			WEIS				1457.1	1457.3	1				IIIB
	2017	2400	CULG				2021	2400					IIIN,W
			CULG				2056	2115					IS,W
			CULG				2136	2155	1				IS
	2147	2152	MANI										
30	0000	0716	CULG				0000	0133					IIIN,W
	0140	0600	MANI										
			CULG				0231	0559					IIIN,W
			CULG				0231	0559	1				IIIN
			CULG				0423		1				RS,DP
			CULG				0559	0716					IIIS,W
	0618	0900	MANI										
			CULG				0656.5	0657	1				IIIG,U
	0640	0910	WEIS				0656.5	1231.0	1				IIIN
			CULG				0657.5	0658	1				IIIB,U
			CULG				0710		1				IIIB
			WEIS				0901.4	0903.7	1				IIIGG
	0720	1610	DURN				0901.5	0903.3	1				IIIG
	1032	1531	WEIS										
	1118	2000	SGMR				1427.0	1427.6	1				III

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				DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND			
	START UT	END UT		START UT	END UT	INT	START UT	END UT	INT	START UT	END UT	INT	
19			CULG				0536.5	0539	1				IIIGG
			CULG				0553	0555.5	1				IIIGG
			CULG				0631		1				IIIB
	0646	1610	DURN										
	0623	1437	WEIS				1145.3	1146.6	1				IIIG
			WEIS				1327.7	1328.2	3				IIIG
	1105	2000	SGMR				1327.7	1328.7	2				IIIG
			WEIS				1344.4	1345.0	3				IIIG
			SGMR				1344.5	1347.1	2				IIIG
			WEIS				1346.7	1347.1	2				IIIG
	1508	1552	WEIS										
	2017	2400	CULG				2017	2400					IS,W
			CULG				2017	2321					IIIN,W
			CULG				2032		1				IIIB
	2154	2400	MANI										
20	0000	0912	MANI										
	0000	0716	CULG				0000	0356					IS,W
			CULG				0100	0716					IIIN,W
			CULG							0128	0220	1	S.W.F.
			CULG				0231	0231.5	1				IIIG
			CULG				0356	0716					IN,W
			CULG				0555	0555.5	1				IIIG
	0646	1610	DURN				0646 E	1300	1				I
	0625	1550	WEIS				0759.6	0802.3	2				IIIG
	1106	2000	SGMR				1250.4	1253.0	2				IIIG
			WEIS				1250.6	1253.5	2				IIIG
			CULG				2017	2400					IIIN,W
	2017	2400	CULG	2017	2400		2017	2153					IN,W
			CULG	2046	2115	1							IN
			CULG	2127.5	2128	1							IIIG
			CULG	2132.5	2133	1							IIIG
			CULG	2132	2132.5	1							IIIG
	2200	2400	MANI										
			CULG	2236	2236.5	1							IIIG
			CULG	2238	2238.5	1							IIIG
			CULG				2331	2400					IN,W
21	0000	0716	CULG	0000	0305		0000	0130					IN,W
			CULG				0000	0716					IIIN,W
	0000	0900	MANI										
			CULG				0158.5		1				IIIB
			CULG				0225	0241					IN,W
			CULG				0446.5	0448					IIIG,W
			CULG				0448	0451.5	1				IIIG
			CULG	0519	0519.5	1	0519	0520	1				IIIG
			CULG	0635	0637	1							IIIG
			CULG				0638.5		1				IIIB
	0646	1607	DURN				0700	0750	1				IDC
	0626	1658	WEIS				0753.5	0753.6	2				IIIB
			DURN				0920.1	0920.1	1				III
			WEIS				1340.3	1340.4	1				IIIB
			WEIS				1344.6	1344.7	1				IIIB
			WEIS				1347.4	1347.9	1				IIIG
			WEIS				1354.4	1354.5	1				IIIB
			WEIS				1405.1	1405.3	1				IIIG
			WEIS				1409.3	1409.4	1				IIIG
			WEIS				1521.7	1521.8	1				IIIG
	1107	2000	SGMR				1601.2	1602.7	1				IIIG
			SGMR				1610.5	1612.6	1				IIIG
			DURN	1658.6	1601.3	1	1556.7	1601.9	3				IIIGG
			CULG	2021	2118								IS,W
			CULG				2021	2400	1				IS
	2021	2400	CULG				2021	2225	1				IIIS
	2147	2400	MANI										
			CULG				2225	2400					IIIN,W
			CULG	2354									IIIG,W
22	0000	0716	CULG				0000	0556	1				IS
			CULG				0000	0228					IIIN,W

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OCT 1978	TIMES OF OBSERVATION		STATION	EVENTS									SPECTRAL TYPE
				DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND			
	START UT	END UT		START UT	END UT	INT	START UT	END UT	INT	START UT	END UT	INT	
22	0000	0155	MANI										
			CULG				0154	0154.5	1	0154.5		1	IIIB
	0203	0426	MANI										
			CULG				0228	0716					IIIS,W
			CULG	0409	0501								IN,W
	0431	0900	MANI										
			CULG				0433	0653	1				N,RS,DP
			CULG				0448.5	0449.5	1				DC
			CULG	0501	0716								IN,W
			CULG	0556.5	0558.5	1	0556.5	0558.5	1				IIIG
			CULG	0605	0716	1	0556.5	0716	1				IS,C
	0627	0727	WEIS										
	0646	1630	DURN				0646 E	1630 D	1				I
			DURN	0922.3	0922.3	1	0922.3	0922.3	1				IIIG
	0900	1546	WEIS				0922.3	0922.8	1				IIIG
			WEIS				0945.6	0945.8	2				IIIG
			WEIS				0959.1	1002.6	2				IIIGG
			WEIS				1056.3	1101.0	2				IIIG,RS
			WEIS				1118.4	1118.5	1				IIIB
			WEIS				1234.4	1234.5	1				IIIG
			WEIS				1236.5	1236.7	1				IIIG
			WEIS				1330.8	1330.9	1				IIIB
	1109	2000	SGMR				1801.2	1805.3	1				IIIG
	2016	2400	CULG				2016	2400					IIIS,W
			CULG				2016	2400					IN,W
			CULG				2024.5		1				IIIB
			CULG	2027	2052								IN,W
			CULG				2058	2058.5	1				IIIG
			CULG	2108	2108.5	2							IIIG
			CULG	2118.5	2119	1							IIIG
			CULG	2144	2144.5	2							IIIG
			CULG	2149.5	2152.5								IIIG,W
			CULG	2156	2218								IN,W
	2158	2400	MANI										
			CULG				2209		1				IIIB
23			CULG				0000	0642					IIIN,W
	0000	0716	CULG				0000	0413	1				IS,DC
	0000	0902	MANI										
			CULG				0046.5		1				IIIB
			CULG				0142		1				IIIB
			CULG				0152	0152.5	1				IIIG
			CULG				0225	0338					IIIS,W
			CULG				0318.5	0320	1				RS,DP
			CULG	0323.5	0324	2	0323.5	0324.5	3				IIIG,V
			CULG				0413	0620					IN,W
			CULG				0457	0520					IIIS,W
			CULG	0525.5	0526	2							IIIG
			CULG	0528.5	0529	1							IIIG
			CULG				0620	0716	1				IS,DC
			CULG				0642	0716					IIIS,W
	0629	1544	WEIS				0643.4	0649.2	1				IIIGG
			CULG				0643	0715	1				N,RS,DP
			CULG	0644.5	0645.5	1	0643.5	0647	2				IIIGG
	0706	1630	DURN	0847.2	0847.3	3	0847.2	0847.4	3				IIIG
			WEIS				0847.3	0847.5	1				IIIG
			WEIS				0856.2	0856.4	1				IIIG
			DURN	0856.2	0856.3	1	0856.2	0856.3	1				IIIG
			WEIS				0928.6	0931.1	2				IIIG
			WEIS				0933.8	0934.1	2				IIIB
			DURN				0941.5	0953.1	3				IIIG,N
			WEIS				0945.5	0947.7	2				IIIGG
			WEIS				0949.7	0953.3	1				IIIGG
			WEIS				0954.6	0954.7	1				IIIB
			WEIS				1005.9	1006.6	1				IIIG
			WEIS				1011.3	1011.4	1				IIIB
			DURN				1027.0	1027.1	3				IIIG
			WEIS				1027.5	1027.7	2				IIIG
			WEIS				1030.3	1030.4	1				IIIG
			DURN	1030.3	1030.5	3	1030.3	1030.5	3				IIIG

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OCT 1978	TIMES OF OBSERVATION		STATION	EVENTS									SPECTRAL TYPE
				DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND			
	START UT	END UT		START UT	END UT	INT	START UT	END UT	INT	START UT	END UT	INT	
23			WEIS				1035.6	1035.7	1				IIIB
			WEIS				1116.5	1118.3	3				IIIG
			DURN				1117.5	1117.9	3				IIIG
	1110	2000	SGMR				1117.5	1117.8	1				III
			SGMR				1156.3	1511.0	2				IIIS
			WEIS				1156.3	1156.8	2				IIIB
			DURN				1240	1400	1				I
			WEIS				1244.8	1247.6	1				IIIG
			WEIS				1250.6	1252.2	1				IIIG
			WEIS				1319.7	1319.8	1				IIIB
			WEIS				1326.7	1328.3	1				IIIG
			WEIS				1330.7	1330.9	1				IIIG
			WEIS				1341.7	1341.8	1				IIIB
			WEIS				1401.3	1402.8	1				IIIG
			WEIS				1432.3	1432.4	2				IIIG
			DURN				1432.3	1432.3	3				III
			WEIS				1446.7	1447.0	1				IIIG
			WEIS				1449.6	1449.8	2				IIIG
			CULG	2016	2110	1							IS
	2016	2400	CULG				2016	2122	1				IS,DC
			CULG				2016	2400					IIIS,W
			CULG				2055	2339	1				N,RS,DP
			CULG				2122	2400	1				IS
	2148	2400	MANI										
			CULG	2156	2400								IN,W
			CULG				2256.5		1				IIIB
24	0000	0715	CULG				0000	0312	1				IS
			CULG				0000	0715					IIIS,W
	0000	0901	MANI										
			CULG				0026.5	0028	1				UNCLF,SLOW
			CULG				0119.5		1				IIIB
			CULG				0241		2	0241		1	IIIB
			CULG				0312	0715					IS,W
			CULG				0445	0448	1				IIIG
			CULG				0451	0452	2				IIIG,U
			CULG				0506	0515	1				IS,DC
	0630	0730	WEIS				0649.9	0650.8	1				IIIG
			CULG				0650	0651	1				IIIG
			WEIS				0652.7	0652.8	1				IIIB
			WEIS				0658.0	0658.1	1				IIIB
			WEIS				0725.1	0725.5	2				IIIG
	0801	1044	WEIS				0819.3	0822.2	2				IIIG
			WEIS				0853.3	0853.4	1				IIIB
			WEIS				0907.0	0907.3	1				IIIB
			WEIS				1027.5	1027.7	1				IIIG
	1111	2000	SGMR										
	1100	1542	WEIS				1152.8	1524.0	2				IIIN
			WEIS				1329.5	1457.5	1				IN,DC
	0813	1630	DURN				1523.3	1523.3	3				III
	2018	2400	CULG	2018	2114	1	2018	2115.5	1				IS
			CULG				2018	2135					IIIS,W
			CULG	2109	2109.5	2	2109	2109.5	1				IIIG
			CULG				2135	2400					IIIN,W
			CULG	2154	2318	1	2115	2216	1				IS
			CULG				2156	2156.5	1				IIIG
	2156	2400	MANI										
			CULG				2216	2400	1				IS,DC
			CULG	2227	2227.5	2	2227	2227.5	1				IIIG
			CULG	2231	2231.5	2	2231	2231.5	1				IIIG
			CULG	2339.5	2340	1							FAST DRIFT
			CULG	2346		1	2346		1				IIIB
			CULG	2350	2350.5	1							IIIG
25	0000	0716	CULG				0000	0341	1				IS
			CULG				0000	0238					IIIN,W
	0000	0904	MANI										
			CULG	0037	0124	1							IS
			CULG	0056.5	0057.5	2							FAST DRIFT
			CULG	0119	0119.5	1							FAST DRIFT

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OCT 1978	TIMES OF OBSERVATION START UT	TIMES OF OBSERVATION END UT	STATION	EVENTS DECIMETRIC BAND START UT	DECIMETRIC BAND END UT	DECIMETRIC BAND INT	METRIC BAND START UT	METRIC BAND END UT	METRIC BAND INT	DEKAMETRIC BAND START UT	DEKAMETRIC BAND END UT	DEKAMETRIC BAND INT	SPECTRAL TYPE
25			CULG	0149	0149.5	1							FAST DRIFT
			CULG	0202.5	0203	1							FAST DRIFT
			CULG	0227	0227.5	2							FAST DRIFT
			CULG	0230	0716	1							IN
			CULG				0238	0325					IIIS,W
			CULG				0312	0313.5	1				IIIG
			CULG				0325	0704					IIIN,W
			CULG				0341	0535	1				IN
			CULG				0442.5	0444					II, W
			CULG	0442.5	0444	2							II
			CULG				0704	0716					IIIS,W
	0714	1630	DURN										
	0632	1541	WEIS				0725.1	0725.3	2				IIIG
			WEIS				0739.5	1140.5	1				IN
			WEIS				0805.3	0805.4	2				IIIB
			DURN				1048.5	1049.1	3				IIIG
			WEIS				1048.6	1049.1	2				IIIG
	1112	2000	SGMR										
			WEIS				1152.2	1152.3	1				IIIB
			WEIS				1207.8	1212.4	1				IIIG
			DURN				1207.9	1212.2	1				IIIG,N
			WEIS				1423.6	1423.9	1				IIIG
			DURN	1517.5	1517.8	3	1517.5	1518.2	3				III/V
			WEIS				1517.6	1518.1	3				IIIG
	2016	2400	CULG				2016	2400					IIIS,W
			CULG				2016	2314					IS,W
			CULG				2131.5		1	2131.5	2132	1	IIIG
			CULG				2239		1	2239	2239.5	1	IIIB
			CULG				2300	2301	1				IIIG
			CULG				2306.5		2				IIIB
			CULG				2322		1				IIIB
26	0000	0716	CULG				0000	0716					IIIS,W
			CULG	0013	0426		0035	0607					IN,W
			CULG	0041.5	0043	1							IIIGG
			CULG				0357		2				IIIB
			CULG	0417	0417.5	1							IIIG
	0715	1610	DURN				0900.2	0900.2	1				IIIB
	0633	1324	WEIS				0920.7	1528.0	1				IIIN
	1113	2000	SGMR										
			DURN				1450.3	1450.3	3				IIIB
	2016	2400	CULG				2016	2400	1				IS
			CULG				2016	2400	1				N,RS,DP
			CULG				2016	2400	1				IIIS
			CULG				2138.5	2139	2	2139		1	IIIG
			CULG	2255.5	2256.5	1							FAST DRIFT
27			CULG				0000	0716	1				RS,DP
			CULG				0000	0335	1				IIIS
	0000	0716	CULG				0000	0218	1				IS
			CULG	0030	0133	1							IN
			CULG	0133.5	0716	1							IS
			CULG				0218	0331	2				IS
			CULG				0331	0535	2				IS
			CULG				0335	0716					IIIS,W
			CULG				0423			0423.5			IIIB,W
			CULG				0535	0716	1				IS
	0715	1620	DURN				0715 E	1500	2				IDC
			WEIS				0717.7	1335.0	1				IIIN
	0635	1537	WEIS				0754.0	1432.2	1				IN
	1115	2000	SGMR										
			DURN				1226.2	1226.4	2				IIIG
			WEIS				1226.3	1226.5	1				IIIG
			CULG				2016	2400					IIIS,W
	2016	2400	CULG				2016	2055	1				IS
			CULG				2033.5		1				IIIB
			CULG				2039		1				IIIB
			CULG	2054	2350	1	2055	2400	1				IS
	2147	2400	MANI										
			CULG				2218.5		1	2218.5		1	IIIB

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OCT 1978	TIMES OF OBSERVATION		STATION	EVENTS									SPECTRAL TYPE
				DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND			
	START UT	END UT		START UT	END UT	INT	START UT	END UT	INT	START UT	END UT	INT	
15			CULG	2119	2119.5	1	2119	2120	1	2119	2119.5	1	IIIG
16	0000	0717	CULG				0000	0044	1				IS
			CULG				0000	0717					IIIN,W
			CULG				0044	0418					IS,W
	0230	0900	MANI										
			CULG				0418	0511	1				IS,DC
			CULG				0511	0717					IS,W
	0609	1625	DURN										
	0617	1558	WEIS				0651.1	0651.6	2				IIIG
			CULG				0651	0652	1				IIIG
			WEIS				0752.0	0753.6	1				IIIG
			WEIS				1015.9	1016.2	1				IIIG
	1101	2000	SGMR										
			WEIS				1402.5	1408.0	1				II
	2018	2400	CULG				2018	2400	1				IS,DC
			CULG	2018	2400	1							IS
			CULG				2018	2400					IIIS,W
			CULG	2144.5	2145.5	1							FAST DRIFT
	2151	2400	MANI										
			CULG				2318	2318.5	2				RS,DC
17			CULG	0000	0717	1	0000	0026	1				IS
	0000	0717	CULG				0000	0717					IIIS,W
	0000	0900	MANI										
			CULG				0026	0409					IS,W
			CULG				0409	0717	1				IS
	0611	1624	DURN				0611 E	1624 D	1				I
	0620	1232	WEIS				0736.0	0820.5	1				IIIS
			WEIS				0746.7	0747.6	2				IIIG
	1102	2000	SGMR										
			WEIS				1135.4	1135.5	1				IIIB
	1405	1556	WEIS				1410.1	1410.2	1				IIIB
			CULG	2017	2400		2017	2400					IS,W
	2017	2400	CULG				2017	2400					IIIS,W
			CULG	2116.5	2117	1							IIIG
			CULG	2143	2143.5	1	2143	2145	1				IIIG
	2147	2400	MANI										
18	0000	0854	MANI										
			CULG	0000	0717	1	0000	0041	1				IS
	0000	0717	CULG				0000	0717					IIIS,W
			CULG	0001.5	0002.5	2	0001.5	0002.5	2				IIIG
			CULG	0003.5	0007.5	2	0005	0012	2				II
			CULG				0041	0717	1				IS,DC
			CULG				0103		1				IIIB
			CULG				0115	0116	1				IIIG
			CULG	0442.5		1	0442.5		2				IIIB
			CULG				0442	0443	1				IIIG
	0611	1604	DURN				0611 E	1200	1				I
	0622	1554	WEIS				0628.2	1212.0	1				I
			WEIS				0908.5	1539.0	2				IIIN
	1104	2000	SGMR				1157.8	1158.0	1				III
			SGMR				1254.5	1254.9	2				IIIG
	2017	2400	CULG				2017	2400					IIIS,W
			CULG	2017	2400	1	2017	2400	1				IS
	2155	2400	MANI										
			CULG				2202	2203	1				II
			CULG				2206.5	2215.5					IIW
			CULG				2209	2213	1				POSS. IV,P
19			CULG	0000	0157								IN,W
	0000	0717	CULG				0000	0200	1				IS
			CULG				0000	0717					IIIS,W
	0000	0903	MANI										
			CULG	0102.5	0103	1	0102.5	0104	1	0103.5	0104	1	IIIG
			CULG				0106	0120					POSS.II,W
			CULG				0108	0110	2				IIH B
			CULG	0157	0635		0200	0717					IS,W
			CULG				0523	0523.5	1				IIIG

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OCT 1978	TIMES OF OBSERVATION		STATION	EVENTS									SPECTRAL TYPE
				DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND			
	START UT	END UT		START UT	END UT	INT	START UT	END UT	INT	START UT	END UT	INT	
30			CULG				2016	2105	2				IS,C
			CULG				2016	2400	1				IIIN
	2016	2400	CULG				2016	2400					IIIS,W
			CULG				2105	2318	1				IS,DC
			CULG				2112		1				IIIB
	2151	2400	MANI										
			CULG				2318	2400	1				IS
			CULG	2319.5	2320	1	2318	2322.5	2	2319	2323	2	IIIGG,V
			CULG	2322	2328	1							IS
31			CULG				0000	0716					IIIN,W
	0000	0716	CULG				0000	0020					IS,W
	0000	0054	MANI										
			CULG				0006	0006.5	3	0006	0006.5	3	IIIG
			CULG				0010	0012	2	0010	0012	1	IIIGG,U
			CULG				0103.5	0112	1				IIIGG
			CULG				0104		2				IIIB
			CULG				0105	0105.5	3				IIIB,U
			CULG				0107	0108	3				IIIG
			CULG				0131.5	0132.5	2	0131.5	0132.5	1	IIIG,V,U
	0201	0900	MANI										
			CULG				0219	0219.5	2	0219	0219.5	1	IIIB,U
			CULG				0303	0317	1				IIIS
	0643	1530	WEIS				0746.6	1517.0	2				IIIN
			WEIS				1023.5	1031.5	3				IIIGG
	0720	1610	DURN				1024.5	1028.5	3				IIIGG
			DURN				1515.1	1516.0	3				IIIGG
	1120	2000	SGMR				1656.6	1657.0	2				IIIG
	2016	2400	CULG				2016	2400					IIIS,W
			CULG				2035	2041					IS,W
	2146	2151	MANI										
			CULG				2357.5		1				IIIB

The symbols used in connection with the spectral type in describing the important bursts are as follows:

B = Single burst
G = Small group (< 10) of bursts
GG = Large group (> 10) of bursts
C = Underlying continuum (particularly with type I)
S = Storm in the sense of intermittent but apparently connected activity
N = Intermittent activity in this period
U = U-shaped burst of Type III

RS = Reverse slope burst
DP = Drifting pairs
DC = Drifting Chains
H = Herringbone
W = Weak
P = Pulsations
CONT = Continuum
UNCLF = Unclassified activity

Note: The 25-580 MHz solar radio burst observations are being continued at the Harvard Radio Astronomy Station at Fort Davis, Texas, but the preparation of data summaries will be delayed somewhat.

SELECTED SOLAR EVENTS

OCTOBER 1978

Culgoora

UT Date 1978 October	HELIOGRAPH EVENT							Spectral Type	REMARKS
	Start (UT)	End (UT)	Freq. (MHz)	Positions: Central Dist. ($R_\odot$)	Positions: Position Angle (Deg.)	Polarization	Intensity (1-3)		
3	0426	0427	43.25)				2)		
			80)	.9	0	-	1)	IIIG	
			160)				1)		
4	0111	0120	43.25)	.3	90)		)		
			80)	.3	110)	-	3)	IIIGG	*
			160)	.4	145)		)		
	0120	0250	80)	.3	110)	-	2)	IS	
			160)	.4	145)		1)		
	0423	0425	43.25)		70)				
			80)	1.0	80)	-	3)	IIIGG	*
			160)		90)		)		
5	0144	0227	(A) 43.25)	1.0	110)	-	)		Complex source. Type IV moved from position (A) to (B) at times indicated.
			80)		)		3)	IVM	
			160)		)		)		
			(B) 43.25)	1.5	110)	-	)		
			80)		)		)		
	0207	0210	43.25)	.8	)		)		
			80)	.9	110)	-	3)	IIIGG,V	*Complex source
			160)	.9	)		)		
6	0213.5	0214.5	43.25)	1.1	)		3)		
			80)	.9	125)		3)	IIIG,V	*
			160)	.8	)		2)		
7	0105.5	0109	80)	1.2	115)		2)	II	
			160)	1.1	)		3)		
	0337	0337.5	160	1.1	115		2	IIIG	*
7/8	2340	0500	160	.2	90	r	2	IS	
	2340	0500	43.25)	.2	90		2)	IIIS	*
			80)				1)		
9	0024	0028	43.25)				)		
			80)	1.0	125	-	3)	IIIGG,V	
			160)				)		
	0028	0033	43.25)				2)		
			80)	1.0	125	-	3)	II	
			160)				3)		

Days without Heliograph observations: ...Nil.....

*Other type III's observed from same position during the day.

UT Date 1978 October	HELIOGRAPH EVENT							Spectral Type	REMARKS
	Start (UT)	End (UT)	Freq. (MHz)	Positions: Central Dist. ($R_\odot$)	Positions: Position Angle (Deg.)	Polarization	Intensity (1-3)		
9	0033	0044	43.25)		)		2)		
			80)	1.0	125)	-	3)	IV	
			160)		)		3)		
9/10	2330	0149	80)	1.0	)	r	1)		Complex source. Type I activity continued from this region until 13th.
			160)	1.0	260)	R	2)	IS	
			160)	.5	)	varying	2)		
	0031	0032.5	80)	.8	105	-	2)	II	
			160)				3)		
	0149	0150	43.25)				3)		
			80)	.8	105	-	2)	IIIG	
			160)				2)		
11	0148	0148.5	43.25)				3)		
			80)	.8	130	-	3)	IIIB	*
			160)				2)		
12	0154	0444	43.25)		)		3)		Complex source. Source moved from position (A) to (B) at times indicated
			(A) 80)	1.2	295)		3)	IVM	
			160)		)	-	2)		
			43.25)	2.6	)	-	3)		
			(B) 80)		)		3)		
	0336	0337	43.25)	1.2	290		2)	IIIGG	*
			80)				2)		
	0444	0445	80)	.6	180)	-	2)	IIIG,U	*
			160)	.7	)		1)		
12/13	2230	0508	80)	1.0	320)	0	1)	IS	Complex source. Type I activity continued from this region until 15th.
			160)	.6	)		2)		
13	0108	0109	43.25)	1.0	35	-	3)	IIIG	
			80)		45		2)		

Days without Heliograph observations: ...Nil.....

*Other type III's observed from same position during the day.

SELECTED SOLAR EVENTS

OCTOBER 1978

Culgoora

UT Date 1978 October	HELIOGRAPH EVENT							Spectral Type	REMARKS
	Start (UT)	End (UT)	Freq. (MHz)	Positions: Central Dist. (R_o)	Positions: Position Angle (Deg.)	Polarization	Intensity (1-3)		
13/14	2340	0500	80)	.1	180	L	2)	IS	
			160)				2)		
	0103	0104	43.25)	1.2	85)		)		
			80)	1.1	90)		3)	IIIG,V	*
			160)	1.1	90)		)		
15	0007	0009	80)	1.2	90)		2)	Possible	II
			160)	1.0	)		2)		
	0052	0053	43.25)	.2	180		3)	IIIG	
			80)				2)		
16	0020	0500	80)	.2	180		1)	I	Complex source. Type I activity persisted from this region until 20th.
			160)				2)		
18	0443	0444	43.25)	.5	60)	-	3)	IIIG	
			80)		)		3)		
19	0102	0104	43.25)		)		)		
			80)	1.0	310)	-	2)	IIIG	
			160)		)		)		
	0108	0110	43.25)		)		2)		
			80)	1.0	310)		3)	II,HB	
			160)		)		2)		
19/20	2328	0500	80)	1.1	80)		1)	IS	Type I activity persisted from this region until 22nd. Complex source 160 MHz.
			160)	.9	100)		)		
21	0158.5	0200	43.25)				)		
			80)	1.2	100		2)	IIIB	*
			160)				)		

Days without Heliograph observations: .Nil.....

*Other type III's observed from same position during the day.

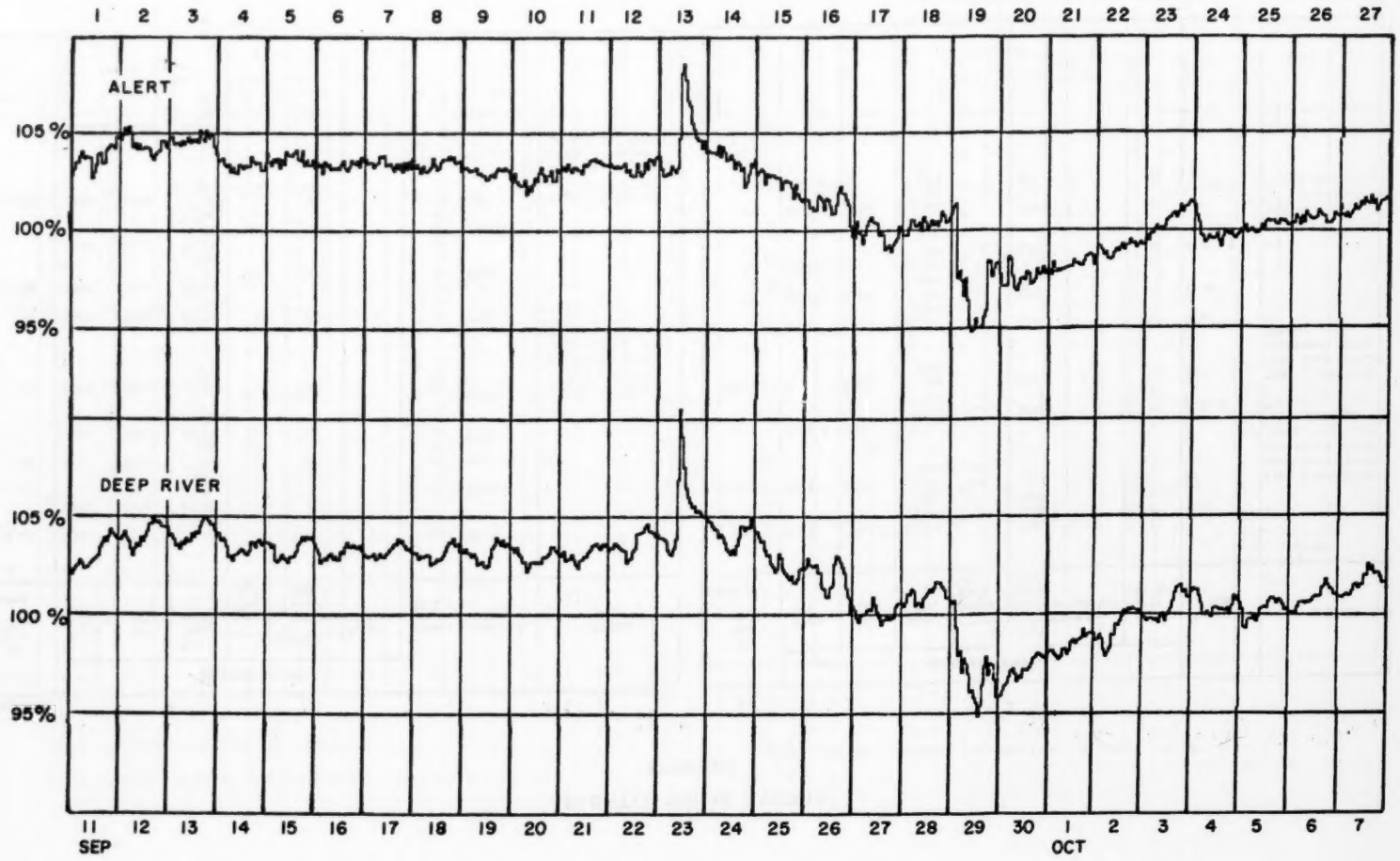
UT Date 1978 October	HELIOGRAPH EVENT							Spectral Type	REMARKS
	Start (UT)	End (UT)	Freq. (MHz)	Positions: Central Dist. (R_o)	Positions: Position Angle (Deg.)	Polarization	Intensity (1-3)		
22	0154	0154.5	43.25)		45)		3)		
			80)	.2	45)		2)	IIIB	*
			160)		90)		2)		
22/23	2242	0500	80)	1.0	45)	L	1)	IS	Type I activity from this region persisted until 26th.
			160)	.6	I		2)		
	0323.5	0324	43.25)	1.3	)		2)		
			80)	1.1	115)		3)	IIIG,V	*
			160)	.8	)		3)		
23/24	2227	0500	80)	1.0	120	r-R	2)	IS	Type I activity from this region persisted until 31st.
			160)			R	)		
	0120	0121	43.25)	1.2	120)		2)	IIIG	*
			80)	1.0	)		)		
25	0442.5	0444	80)	1.1	120)		1)	II,W	
			160)		)		)		
30	2318	2322.5	43.25)		)		3)		
			80)	.8	330)		3)	IIIGG,V	*
			160)		)		2)		
31	0010	0012	43.25)		270		3)		
			80)	.8	260		2)	IIIGG,U	*
			160)		250		1)		

Days without Heliograph observations: ..Nil.....

*Other type III's observed from same position during the day.

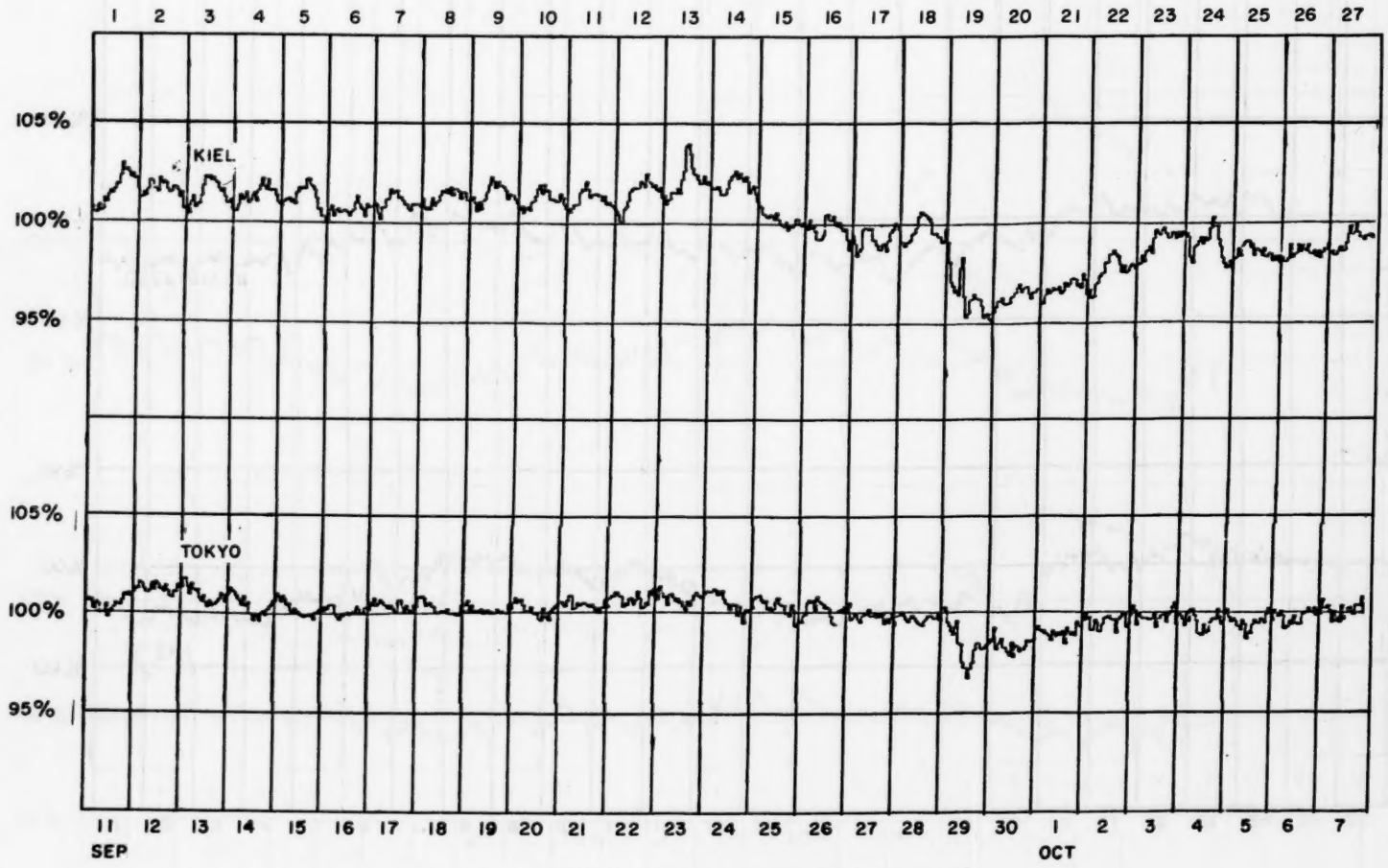
COSMIC RAY INDICES
(Neutron Monitors)

Bartels Rotation 1984 (September - October 1978)



COSMIC RAY INDICES
(Neutron Monitors)

Bartels Rotation 1984 (September - October 1978)



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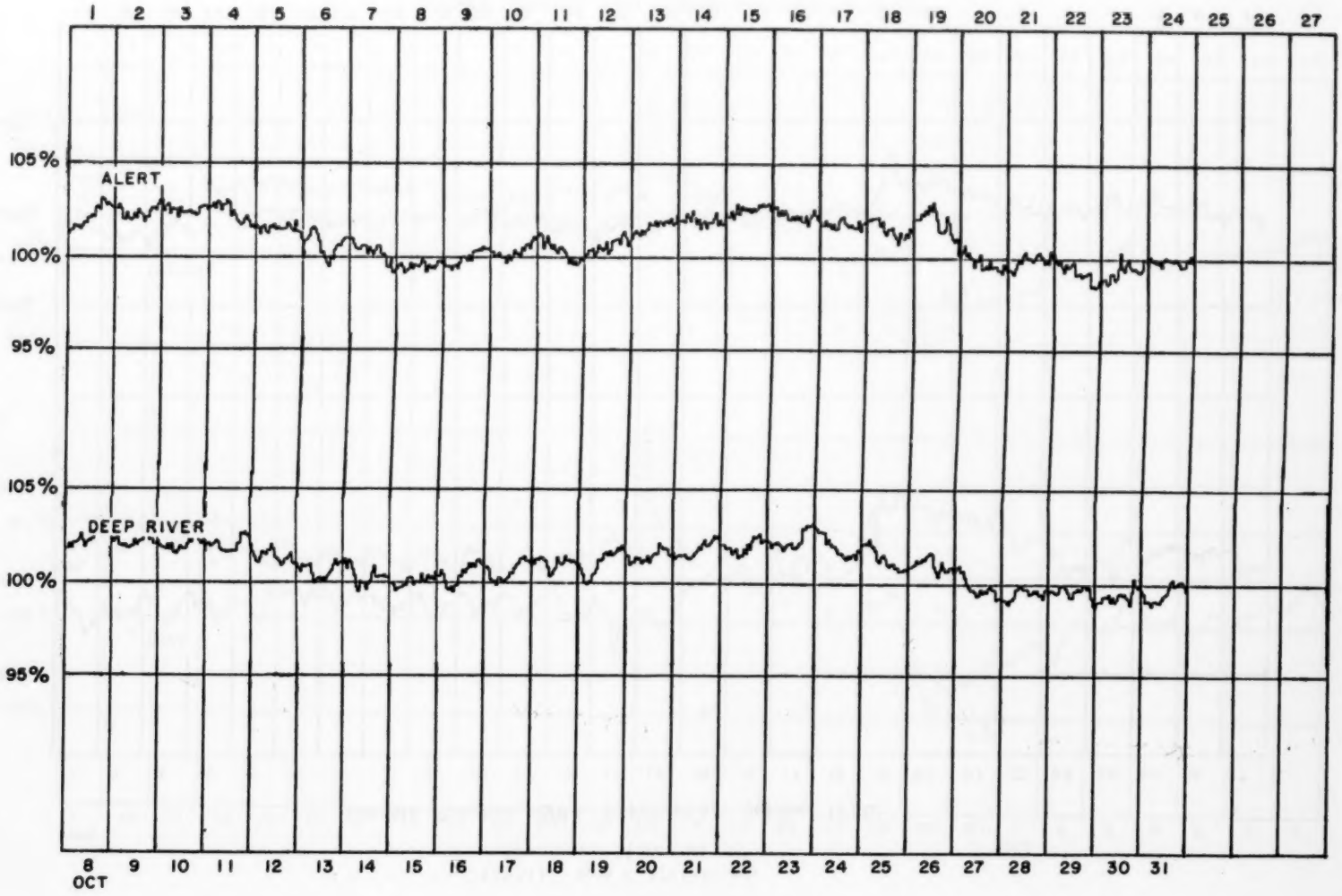
Oct 78

COSMIC RAY INDICES
(Neutron Monitors)

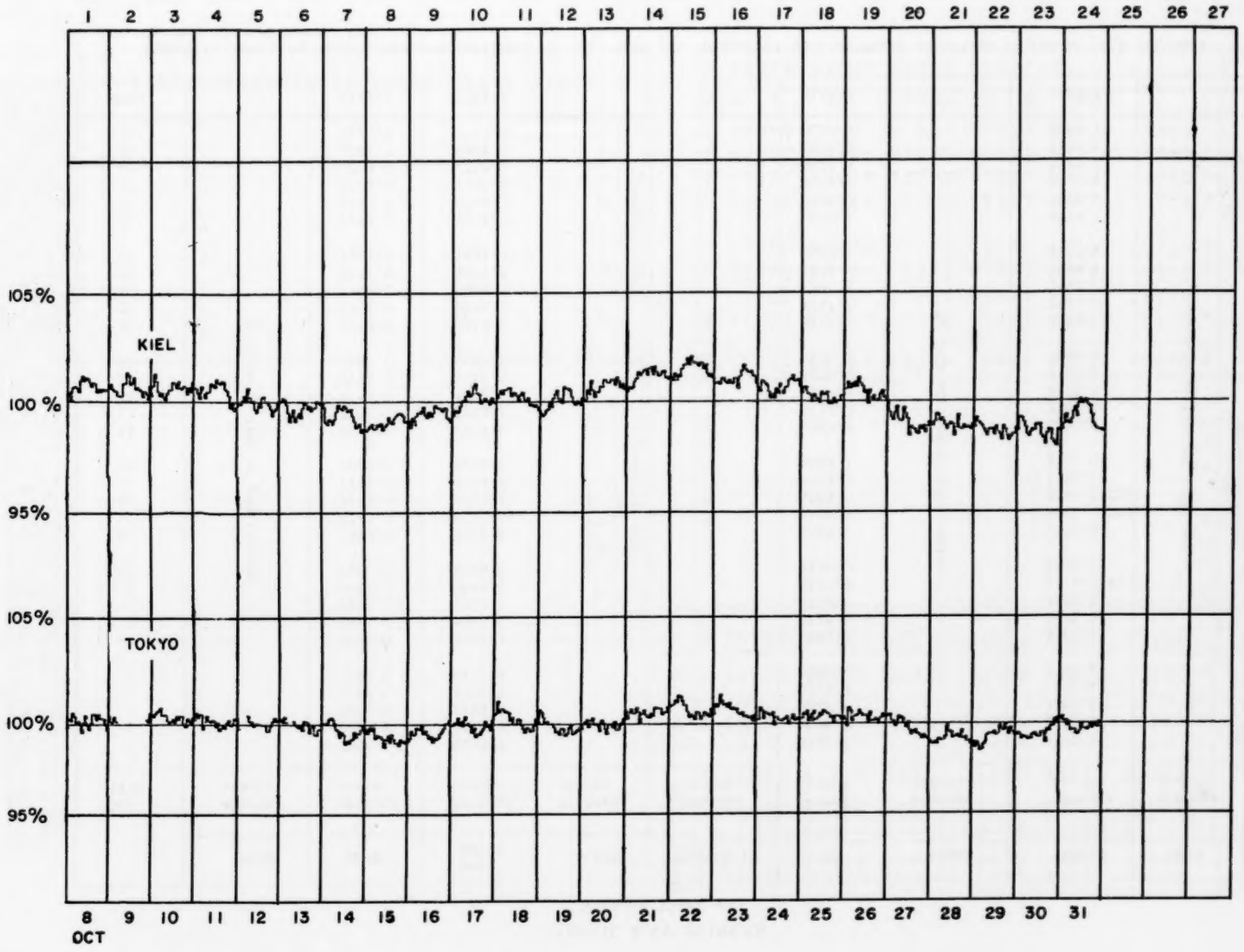
Bartels Rotation 1985 (October 1978)



COSMIC RAY INDICES
(Neutron Monitors)
Bartels Rotation 1985 (October 1978)

COSMIC RAY INDICES
(Neutron Monitors)

Bartels Rotation 1985 (October 1978)



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Oct 78

COSMIC RAY INDICES

(Neutron Monitors)

Oct. 1978	THULE Average cts/hr	ALERT Average cts/hr	DEEP RIVER Average cts/hr	CALGARY Average cts/hr	SULPHUR MT Average cts/hr	KIEL Average cts/hr	CLIMAX Average cts/hr	TOKYO Average cts/hr	KULA Average cts/hr
1	No data at time of publication	7005.5	6630.7	No data at time of publication	No data at time of publication	5983.5	No data at time of publication	3537.9	No data at time of publication
2		7065.3	6697.0			6038.0		3557.5	
3		7174.5	6763.4			6128.9		3567.6	
4		7120.4	6774.8			6115.9		3558.4	
5		7150.8	6757.8			6094.6		3557.6	
6		7179.0	6797.7			6093.2		3565.9	
7		7224.5	6849.9			6129.4		3578.8	
8		7288.4	6905.8			6176.1		3574.3	
9		7302.1	6886.0			6172.9		3576.5(8)	
10		7313.4	6876.8			6171.0		3579.8	
11		7300.0	6878.6			6160.5		3572.3	
12		7240.5	6834.8			6120.7		3568.3(20)	
13		7178.3	6783.2			6103.8		3564.2(21)	
14		7151.9	6765.2			6075.8		3554.1	
15		7099.4	6744.3			6053.3		3540.0	
16		7130.7	6771.8			6082.8		3550.0	
17		7154.0	6783.7			6131.3		3563.1	
18		7158.2	6814.6			6141.5		3575.5	
19		7178.0	6815.9			6128.3		3561.1	
20		7252.1	6839.2			6176.5		3564.8	
21		7273.0	6863.8			6213.2		3589.1	
22		7315.8	6876.2			6237.7		3595.0	
23		7294.2	6898.8			6204.8		3593.7	
24		7261.0	6877.0			6176.0		3578.8	
25		7245.2	6835.0			6140.9		3581.5	
26		7268.0	6812.8			6160.8		3579.1	
27		7118.0	6734.2			6055.0		3559.0	
28		7125.6	6708.5			6045.5		3536.6	
29		7083.8	6718.6			6023.8		3540.2	
30		7087.7	6701.0			6021.3		3546.4	
31		7124.8	6713.0			6070.9		3559.7	
MEAN		7189.2	6797.1			6117.0		3565.1	

( ) Number of hours for which data are available if less than 24. Number of Section Hours at Climax if sum of both sections is less than 40 hours.

Notes: Thule, Alert, Calgary, Sulphur Mountain, Kiel, Climax and Kula Scaling Factors = 100. Deep River Scaling Factor = 300. Tokyo Scaling Factor = 256.

GEOMAGNETIC ACTIVITY INDICES

OCTOBER 1978

Day		Three-Hourly Indices Kp									Three-Hourly Indices Km								Ap	aa *					Cp
		1	2	3	4	5	6	7	8	Sum	1	2	3	4	5	6	7	8		N	S	M			
1		3-	2+	2+	3-	3	3-	3+	3+	22+									13	23	25	20	29		0.8
2		2-	3-	2-	3	3+	3	3-	3	21									12	22	18	14	27		0.7
3		3-	2+	3	2-	2-	1	1+	2-	15+									8	15	14	17	12		0.4
4		4	4-	4-	3	3+	2	3-	3	25+									17	29	20	29	21		0.9
5		4-	2+	1	2	1+	2	1+	1	15-									8	15	9	13	12	KK	0.4
6	Q1	1	1	1	0	1-	2	1-	2-	8									4	8	7	6	10	CC	0.1
7	Q3	2-	2-	1+	1	1+	0+	1	1-	9									4	8	8	10	7	CC	0.2
8	Q8	0	2	1+	2	1+	1	1	2+	11									5	10	12	10	12	CK	0.2
9		1+	3-	2-	3	2	2	3-	4-	19									11	21	25	19	27		0.6
10		4+	4-	2+	3+	3	0+	2	3-	22-	Data not available at time of publication.								15	29	21	34	16		0.8
11	Q9	2	2+	2	2-	1-	1-	0+	1+	11									5	11	8	13	7	CK	0.2
12		1+	1+	1-	3+	4	4	3	3-	20+									14	21	33	17	37		0.8
13		3	2+	2+	1+	2-	1-	2+	2+	16									8	15	17	21	11		0.4
14	Q5	1-	1	1	1-	0+	2	2+	2-	10-									5	9	9	5	13	CC	0.2
15	Q4	1+	0+	1	1+	2+	1	1	2-	10									5	9	11	7	14	CC	0.2
16	Q2	2	2	1-	1-	1+	0+	0+	1-	8									4	8	7	9	6	CC	0.1
17	Q6	0+	1+	1	1	1-	1-	2+	3-	10									5	11	11	7	16	K	0.2
18	D1	4+	5+	5	4-	3+	3+	4+	4	33+									32	52	43	53	41		1.3
19	D4	4	4-	4+	4-	4	2+	4-	3	29-									22	40	33	39	34		1.1
20		3-	3-	2+	3-	3-	2	2	1	18									9	13	20	16	18		0.5
21		1	3	2+	3+	3+	2	3	3	21									13	22	20	15	28		0.7
22		2-	3+	3-	2+	2	3-	2+	1-	18-									10	19	20	19	21		0.5
23	Q0	0+	3-	2+	2-	1+	1	1-	1+	11+									6	11	11	12	10	CK	0.3
24	Q7	2	2+	1	0+	0	1	2+	1+	10+									5	11	8	8	12	CC	0.2
25		1	1	1-	2+	3	3-	2-	1-	13									7	10	15	10	16	KK	0.4
26		2-	2	2	2-	3	3+	5-	5	23+									18	34	29	13	50		1.0
27	D3	4	4+	5+	4+	3	2	1+	3-	27									23	35	40	54	21		1.1
28		3-	4-	4+	3	2	2+	1	3-	22-									14	28	20	24	25		0.8
29		3-	2+	2	3	4	4+	3+	3-	24+									16	31	30	17	45		0.9
30	D2	2-	3+	4-	5-	4-	5-	4+	4-	30-									25	40	49	28	62		1.2
31	D5	4-	4-	3-	2+	4	4	4-	3+	27+									20	41	34	22	53		1.0
																			12	21.0	20.2	20.9			0.59

Day	Three-Hourly Indices Kn								Three-Hourly Indices Ks							
	1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8
1																
2																
3																
4																
5																
6																
7																
8																
9																
10																
11																
12																
13																
14																
15	Data not available at time of publication.															
16																
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31																

Quiet days (Q) and disturbed days (D), geomagnetic planetary three-hour-range indices (Kp) (integers alone are equivalent to those normally given with a small zero), magnetic character figures (Cp), and average amplitude (Ap) (unit 2γ) prepared by Geophysikalisches Institut at the University of Göttingen, F.R. of Germany for the International Service of Geomagnetic Indices. Ten most quiet days [Q1-Q0(10)] and five most disturbed days [D1-D5] are ordered from most quiet or disturbed, respectively. A or K means "not really quiet" (A = "Ap>6", K = "Ap ≤6 but one Kp ≥3o or two Kp values ≥3-"). An * means "not really disturbed" (Ap<20).

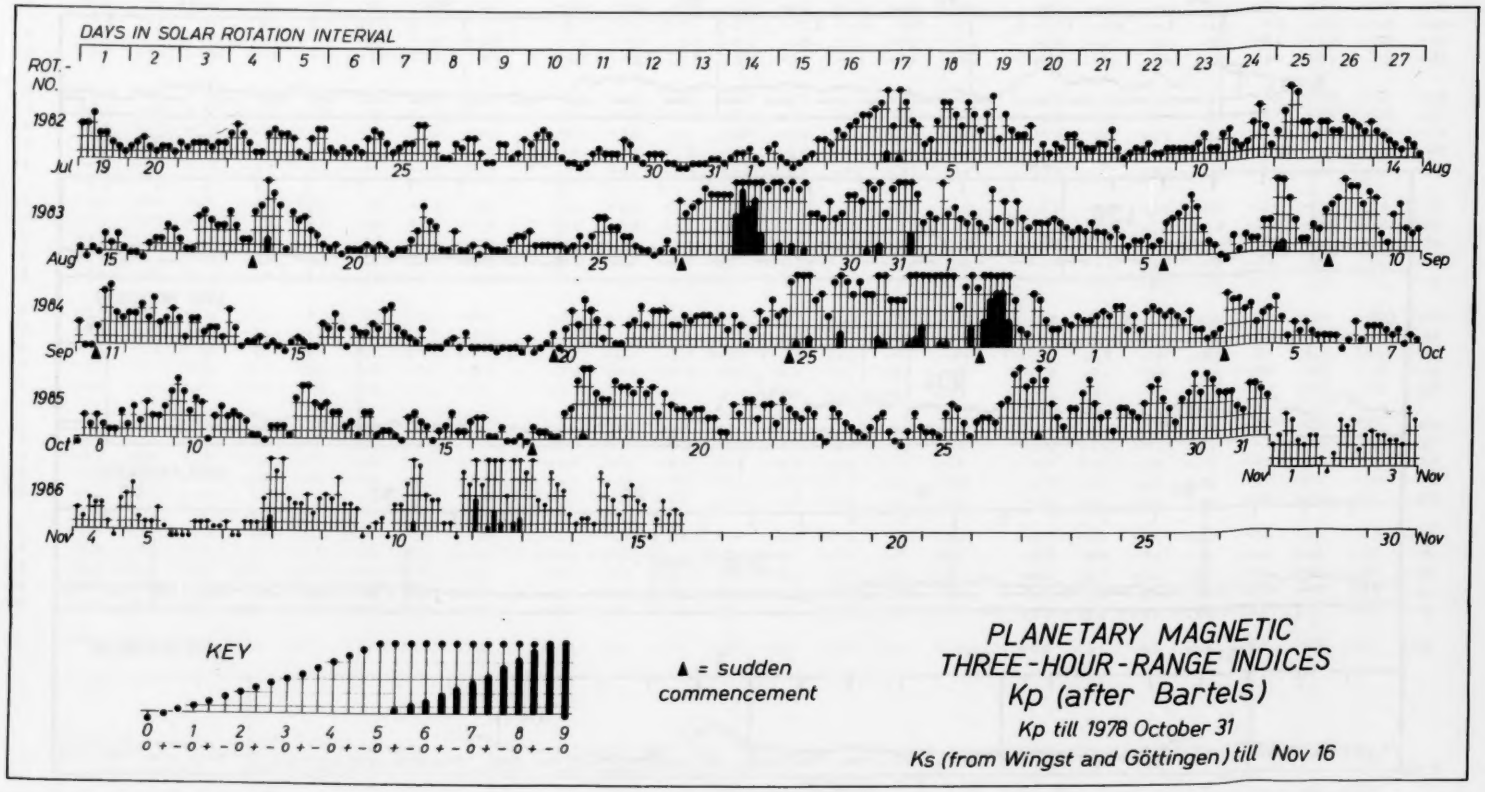
Geoagnetic three-hourly indices (Kn), (Ks) and (Km) as in IAGA-Bulletin No. 32 and indices (aa), "antipodal", as in IAGA-Bulletin No. 33 prepared by P. N. Mayaud of the Institut de Physique du Globe, Paris, France. Really quiet (C) and quiet but slightly disturbed three-hourly intervals (K) are given for 24-hour and 48-hour intervals centered on 12 UT.

DAILY AVERAGE INDICES Ap

	1977		1978									
DAY	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT
1	5	6	7	15	33	12	88	9	6	4	21	13
2	6	69	8	14	27	15	94	82	5	4	20	12
3	4	9	13	14	15	41	83	31	11	16	11	8
4	8	14	89	11	3	55	96	26	80	30	8	17
5	10	18	31	17	6	21	7	38	53	22	7	8
6	7	5	34	14	7	9	5	8	13	16	14	4
7	5	3	13	7	9	5	7	11	14	7	6	4
8	3	2	19	10	20	5	16	10	14	6	24	5
9	3	3	23	16	14	6	85	4	8	5	31	11
10	9	4	21	7	12	36	10	24	10	6	12	15
11	6	38	7	5	7	64	30	17	6	11	12	5
12	18	21	4	10	3	29	18	10	4	21	13	14
13	26	16	8	8	12	24	11	7	20	13	6	8
14	42	8	3	11	10	51	9	4	48	6	5	5
15	25	5	2	48	17	19	5	6	6	3	3	5
16	14	9	14	11	24	8	7	6	6	4	6	4
17	8	12	9	10	25	7	8	9	6	9	8	5
18	6	3	12	10	24	19	5	11	18	24	3	32
19	6	3	6	12	15	38	4	17	11	11	2	22
20	4	4	3	12	9	23	8	11	5	3	5	9
21	5	6	1	12	7	9	26	33	6	6	9	13
22	3	6	3	22	13	8	24	15	8	6	12	10
23	2	4	2	6	15	22	24	18	8	4	11	6
24	2	5	6	5	6	48	26	19	6	4	10	5
25	15	5	12	12	3	17	10	24	8	9	36	7
26	19	11	12	37	49	18	7	46	5	4	36	18
27	12	6	5	42	70	16	5	15	4	29	51	23
28	5	10	9	46	17	12	7	12	6	124	50	14
29	6	8	36		14	6	8	32	4	40	109	16
30	12	5	36		16	58	18	31	3	31	11	25
31		6	23		8		12		2	45		20
MEAN	10	10	15	16	16	23	25	20	13	17	18	12

15	16	16	23	25	20	13	17	18	12		

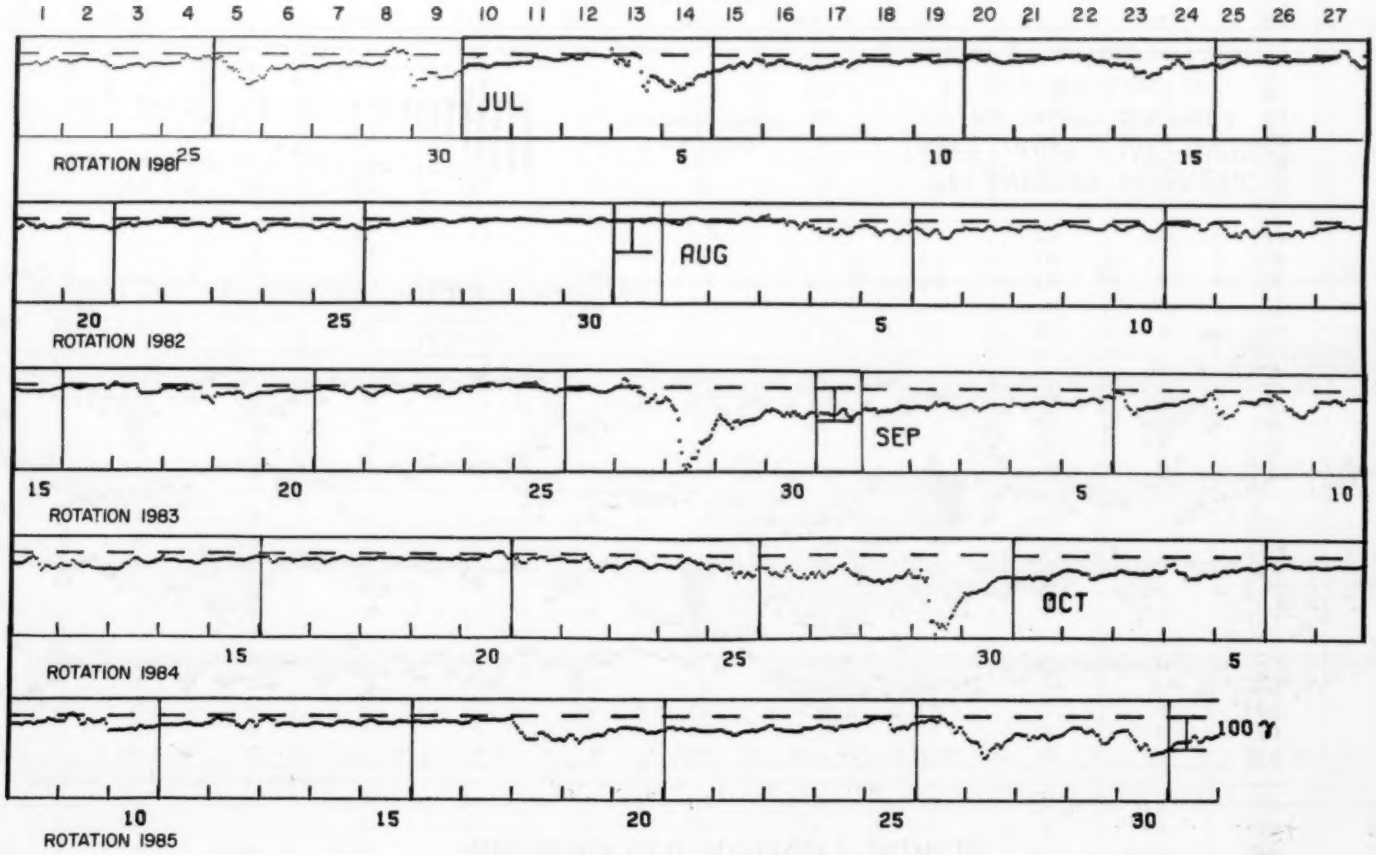
GEOMAGNETIC ACTIVITY INDICES



GEOMAGNETIC ACTIVITY INDICES

Hourly Equatorial Dst

by Bartels Rotation



Note: Both the sensitivity indicator placed on the last day of the month and the zero reference level change from month to month.

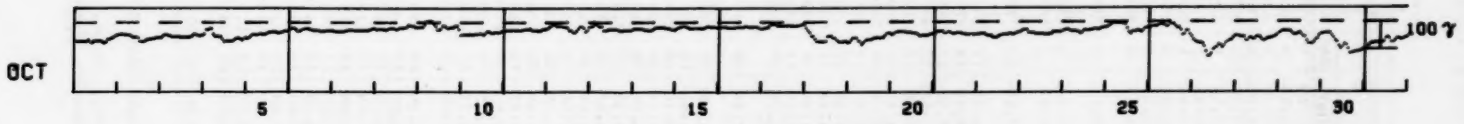
HOURLY EQUATORIAL Dst VALUES (PROVISIONAL)

NASA/GODDARD SPACE FLIGHT CENTER

OCTOBER 1978

(Time-UT) (Units-Gammas)

DAY	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
1	-68	-69	-69	-67	-67	-68	-67	-62	-69	-74	-67	-65	-67	-66	-65	-70	-74	-69	-61	-61	-56	-54	-49	-45
2	-43	-42	-44	-45	-46	-47	-46	-50	-55	-55	-53	-57	-67	-70	-68	-65	-61	-60	-58	-60	-57	-54	-55	-56
3	-53	-47	-43	-45	-48	-50	-53	-51	-53	-52	-51	-55	-55	-55	-53	-54	-53	-50	-43	-45	-48	-50	-48	-46
4	-42	-27	-26	-23	-25	-44	-50	-50	-53	-53	-60	-69	-66	-66	-66	-65	-65	-60	-56	-56	-61	-64	-58	-54
5	-59	-54	-48	-43	-45	-47	-42	-40	-43	-45	-42	-39	-36	-36	-34	-36	-36	-39	-39	-36	-34	-31	-32	-30
6	-24	-21	-22	-27	-33	-32	-28	-24	-22	-22	-24	-27	-29	-31	-30	-31	-32	-35	-32	-31	-30	-32	-30	-29
7	-33	-35	-36	-35	-34	-34	-33	-30	-29	-28	-27	-31	-31	-31	-31	-31	-30	-30	-30	-30	-27	-25	-22	-24
8	-27	-27	-26	-25	-26	-29	-29	-23	-21	-24	-24	-28	-25	-20	-20	-20	-19	-17	-11	-14	-16	-16	-20	-18
9	-20	-17	-17	-10	3	2	6	1	-6	-14	-29	-27	-23	-13	-14	-19	-23	-19	-18	-19	-13	-13	-26	-48
10	-44	-43	-43	-47	-42	-46	-45	-42	-42	-41	-39	-44	-47	-38	-33	-36	-39	-40	-37	-36	-39	-36	-33	-30
11	-29	-30	-31	-30	-28	-28	-31	-31	-31	-29	-27	-25	-27	-26	-23	-30	-32	-30	-29	-33	-31	-26	-24	-26
12	-22	-16	-12	-8	-10	-15	-13	-14	-17	-19	-17	-22	-31	-29	-37	-39	-32	-24	-16	-17	-22	-35	-30	-19
13	-15	-13	-8	-9	-13	-17	-17	-32	-31	-28	-25	-27	-27	-27	-27	-30	-33	-32	-29	-31	-32	-29	-30	-26
14	-23	-23	-23	-24	-25	-27	-30	-30	-29	-32	-29	-25	-20	-18	-19	-19	-17	-17	-23	-22	-24	-27	-28	-30
15	-22	-18	-17	-14	-13	-17	-20	-24	-24	-23	-23	-22	-24	-24	-25	-22	-19	-16	-16	-19	-19	-20	-21	-21
16	-20	-17	-16	-19	-22	-21	-20	-21	-20	-18	-17	-18	-21	-18	-14	-18	-20	-19	-17	-18	-18	-20	-24	-25
17	-23	-21	-20	-18	-12	-8	-7	-10	-14	-13	-14	-13	-14	-14	-12	-14	-15	-15	-14	-14	-12	-10	-9	-10
18	-22	-32	-39	-51	-54	-62	-70	-71	-72	-69	-72	-68	-51	-49	-53	-59	-58	-65	-71	-73	-71	-68	-69	-74
19	-72	-64	-58	-57	-60	-68	-72	-81	-75	-68	-63	-64	-63	-61	-57	-58	-55	-59	-58	-56	-50	-42	-39	-42
20	-46	-42	-37	-35	-35	-35	-35	-36	-39	-37	-37	-41	-42	-43	-45	-51	-51	-47	-51	-50	-47	-44	-42	-43
21	-41	-35	-35	-33	-35	-40	-38	-36	-37	-41	-44	-40	-38	-38	-40	-44	-44	-46	-45	-47	-45	-44	-44	-43
22	-44	-41	-41	-42	-47	-50	-49	-51	-56	-55	-58	-52	-48	-45	-44	-46	-45	-41	-43	-47	-42	-39	-37	-36
23	-33	-28	-28	-30	-39	-39	-40	-41	-44	-44	-45	-44	-43	-46	-46	-46	-43	-42	-36	-36	-36	-37	-36	-33
24	-30	-27	-26	-33	-35	-34	-32	-37	-37	-42	-38	-31	-31	-32	-30	-28	-27	-25	-26	-30	-25	-21	-20	-19
25	-18	-13	-10	-6	-6	-4	-4	-7	-9	-9	-12	-26	-38	-45	-37	-35	-34	-31	-35	-38	-32	-24	-21	-23
26	-23	-17	-14	-19	-15	-11	-11	-12	-13	-19	-15	-8	-11	-10	-16	-23	-20	-31	-50	-44	-33	-35	-45	-54
27	-65	-71	-75	-77	-77	-80	-89	-109	-125	-122	-115	-100	-94	-90	-82	-85	-92	-86	-76	-71	-66	-64	-57	-50
28	-53	-51	-56	-54	-57	-68	-70	-60	-57	-63	-62	-55	-53	-58	-64	-70	-65	-61	-59	-58	-56	-54	-50	-45
29	-39	-35	-33	-34	-35	-36	-37	-43	-48	-48	-43	-39	-47	-55	-57	-70	-80	-79	-81	-75	-66	-61	-50	-44
30	-44	-41	-40	-40	-42	-50	-58	-67	-74	-89	-96	-90	-80	-85	-99	-114	-111	-110	-108	-106	-107	-104	-100	-96
31	-94	-88	-82	-76	-75	-74	-74	-76	-79	-74	-70	-59	-55	-62	-74	-74	-68	-61	-59	-64	-63	-60	-57	-55



NOTE: Starting May 1978, hourly values of the provisional Dst index have been based on data from Hermanus, Kakioka, and San Juan only, because the magnetometer at Honolulu has not been operated.

PRINCIPAL MAGNETIC STORMS

OCTOBER 1978

OBS. 3 letter IAGA code	GEOMAG-NETIC LATI-TUDE	COMMENCEMENT DAY	hr min (UT)	TYPE	SC - AMPLITUDES D(')	H(y)	Z(y)	MAXIMUM 3 HOUR - INDEX K DAY(3 HOUR PERIOD)	K	RANGES D(')	H(y)	Z(y)	UT END DAY	HOUR
COL	64.6N	4	0047	SC*	+15	+100	+23	04(4)	6	83	830	380	04	16
GUL	24.5N	4	0045	SC	- .8	19	- 3	--	-	6	73	47	05	02
JAI	17.3N	4	0045	SC	- .7	17	- 4	--	-	5	80	41	05	02
SHL	14.6N	4	0045	SC	.4	15	3	--	-	5	103	44	05	02
UJJ	13.5N	4	0045	SC	- .5	21	- 4	--	-	4	85	37	05	02
ABG	09.5N	4	0045	SC	- .6	17	- 5	--	-	3	97	40	05	02
HYB	07.6N	4	0046	SC	- .2	+17	- 1	04(2)	4	4	111	37	05	02
ANN	01.4N	4	0045	SC	- .8	20	12	--	-	3	169	81	05	02
TRD	01.2S	4	0045	SC	.1	13	17	--	-	2	208	115	05	02
PMG	18.6S	4	0146	SC*	- .4*	+25	+21	04(2)	5	10	140	80	05	00
KGL	56.5S	4	0047	SC*	--	--	--	04(7,8)	4	--	--	--	05	04
KGL	56.5S	6	2113	SC*	--	--	--	06(8)	2	--	--	--	07	11
HYB	07.6N	9	0323	SC	- .2	+15	- 1	09(8)	5	5	128	27	10	22
KGL	56.5S	9	0322	SC	--	--	--	10(1)	4	--	--	--	10	16
HYB	07.6N	11	2200	..	..	..	..	12(5)	5	5	129	29	13	13
COL	64.6N	17	23--	..	..	..	..	19(3)	7	186	1640	1010	19	16
SIT	60.1N	17	23--	..	..	..	..	19(3)	7	70	740	420	19	15
NEW	55.1N	17	1415	..	..	..	..	18(2)	6	40	128	168	22	18
GUL	24.5N	17	2300	..	..	..	..	--	-	7	89	44	18	23
JAI	17.3N	17	2300	..	..	..	..	--	-	5	71	34	18	23
SHL	14.6N	17	2300	..	..	..	..	--	-	4	100	31	18	23
UJJ	13.5N	17	2300	..	..	..	..	--	-	3	79	29	18	23
ABG	09.5N	17	2300	..	..	..	..	--	-	3	93	26	18	23
HYB	07.6N	17	1900	..	..	..	..	18(3)	5	3	98	26	19	22
GUA	04.0N	17	2332	..	..	..	..	18(1)	5	--	180	30	18	14
ANN	01.4N	17	2300	..	..	..	..	--	-	3	137	37	18	23
TRD	01.2S	17	2300	..	..	..	..	--	-	--	163	135	18	23
KGL	56.5S	17	0430	SC*	--	--	--	18(1)	5	--	--	--	20	21
HYB	07.6N	25	0200	..	..	..	..	26(5,6,7) 27(3,4)	5	4	204	30	28	20
COL	64.6N	26	08--	..	..	..	..	27(4) 28(3) 29(5)	6	240	1480	1080	31	19
COL	64.6N	26	08--	..	..	..	..	30(4,6) 31(5,6)	6	240	1480	1080	31	19
SIT	60.1N	26	14--	..	..	..	..	27(4)	7	80	--	540	27	14
NEW	55.1N	26	12--	..	..	..	..	27(4)	7	42	300	232	28	18
GUL	24.5N	26	0100	..	..	..	..	--	-	7	151	46	27	22
JAI	17.3N	26	0100	..	..	..	..	--	-	5	145	34	27	22
SHL	14.6N	26	0100	..	..	..	..	--	-	5	173	37	27	22
UJJ	13.5N	26	0100	..	..	..	..	--	-	3	147	32	27	22
ABG	09.5N	26	0100	..	..	..	..	27(3)	6	4	161	35	27	22
GUA	04.0N	26	1343	..	..	..	..	27(3)	5	--	150	20	27	15
ANN	01.4N	26	0100	..	..	..	..	--	-	4	210	63	27	22
TRD	01.2S	26	0100	..	..	..	..	--	-	3	243	112	27	22
PMG	18.6S	26	14--	..	..	..	..	27(3)	6	9	170	70	31	00
HER	33.7S	26	1200	..	..	..	..	26(7)	5	27	96	92	27	18
GNA	43.3S	26	01--	..	..	..	..	27(4)	5	14	140	100	27	15
KGL	56.5S	26	01--	..	..	..	..	26(7)	6	--	--	--	27	19
NEW	55.1N	29	08--	..	..	..	..	29(6) 30(3,4,5,6)	5	35	159	155	02	01
NEW	55.1N	29	08--	..	..	..	..	31(5,6)	5	35	159	155	02	01
GUL	24.5N	29	1100	..	..	..	..	--	-	8	119	53	31	02
JAI	17.3N	29	1100	..	..	..	..	--	-	6	127	34	31	02
SHL	14.6N	29	1100	..	..	..	..	--	-	4	137	24	31	02
UJJ	13.5N	29	1100	..	..	..	..	--	-	1	137	26	31	02
ABG	09.5N	29	1100	..	..	..	..	--	-	4	144	27	31	02
HYB	07.6N	29	1116	SC	- .1	+10	- 1	29(6) 30(6) 31(5,6)	5	4	165	16	31	22
ANN	01.4N	29	1100	..	..	..	..	--	-	--	--	--	31	02
TRD	01.2S	29	1100	..	..	..	..	--	-	2	187	64	31	02
GNA	43.3S	29	11--	..	..	..	..	31(6)	7	20	80	110	31	19
KGL	56.5S	29	1115	SC*	--	--	--	30(6)	8	--	--	--	31	23
GUA	04.0N	30	0510	..	..	..	..	30(6)	5	--	100	20	30	21

Reports were received from the following observatories:

Alibag Annamalainagar College Fredericksburg Gnangara Guam Gulmarg Hermanus Hyderabad Jaipur
Kerguelen Newport Port Moresby San Juan Shillong Sitka Trivandrum Ujjain Witteveen

SUDDEN COMMENCEMENTS AND SOLAR FLARE EFFECTS

OCTOBER 1978

PRELIMINARY REPORT ON RAPID MAGNETIC VARIATIONS

The meaning of the station symbols is given in the IAGA-News No. 16.
Times of ssc are mean values.

Sudden commencements followed by a magnetic storm or a period of storminess (ssc)

04 0047 A: VIC COI TOL LMM PAF
B: WNG WIT VAL DOU AQU EBR CZT DRV
C: MMB HAZ KNY (si: A: FUR
C: NGK)

09 0322 A: LMM
B: VAL VIC AQU EBR COI TOL PAF DRV
C: WNG WIT HAD MMB HAZ KNY CZT

17 0430 A: COI
B: SOD WNG AQU PAF
C: WIT NGK VAL HAD TOL CZT DRV (bp: A: LMM)

29 1116 A: PAF
B: VAL
C: WNG HAD KNY CZT DRV (bp: B: LMM)

Solar flare effects (sfe)

Effects confirmed by ionospheric or solar observations are underlined.

01 0700 - 0721 WIT

05 1114 - 1145 WNG

13 1234 - 1315 WNG (b: A: LMM)

14 2334 - 2348 HAZ

15 0621 - 0633 HAZ (bp: C: LMM)

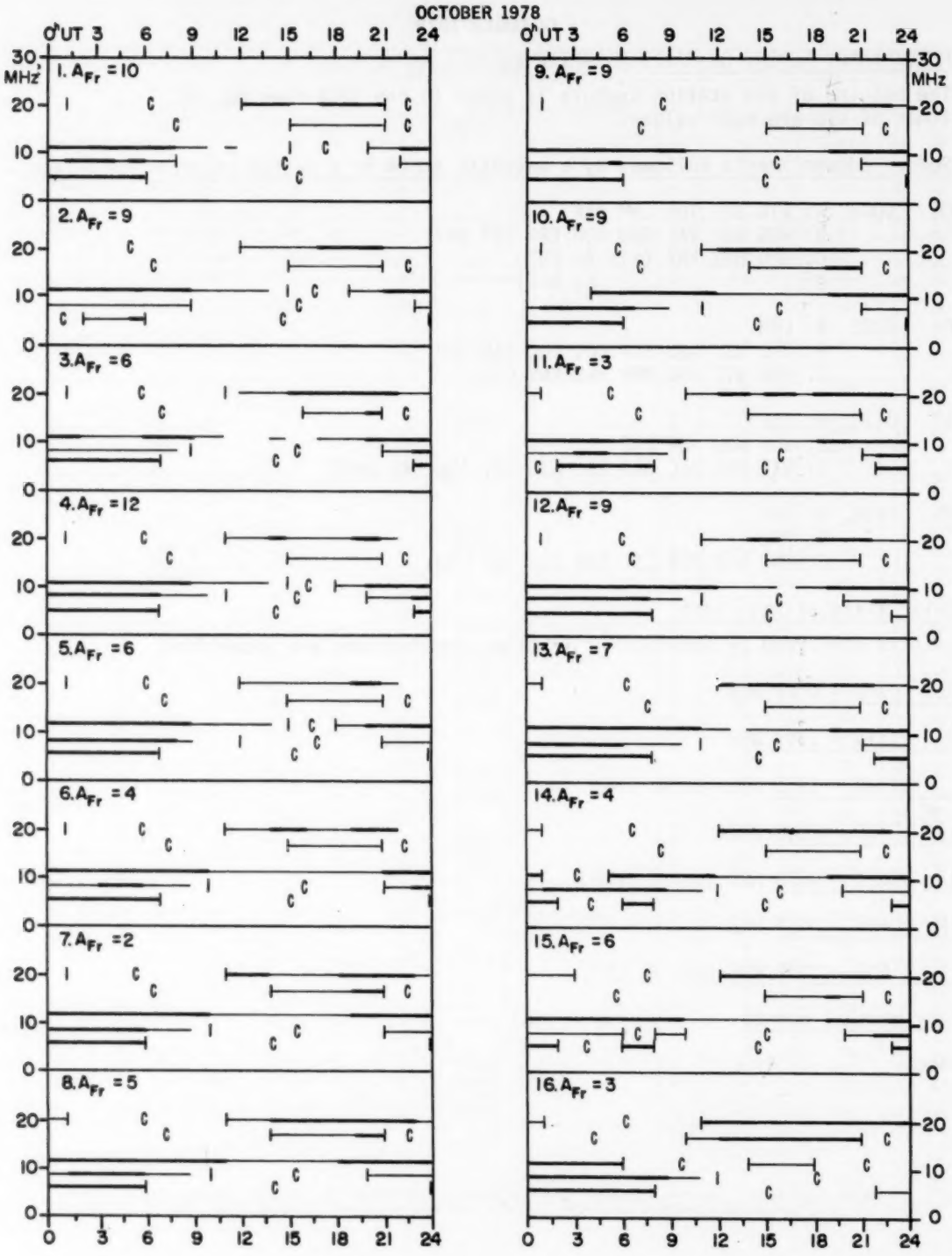
19 0406 - 0416 HAZ

21 1402 - 1455 WNG (bp: B: EBR)

Very unusual events

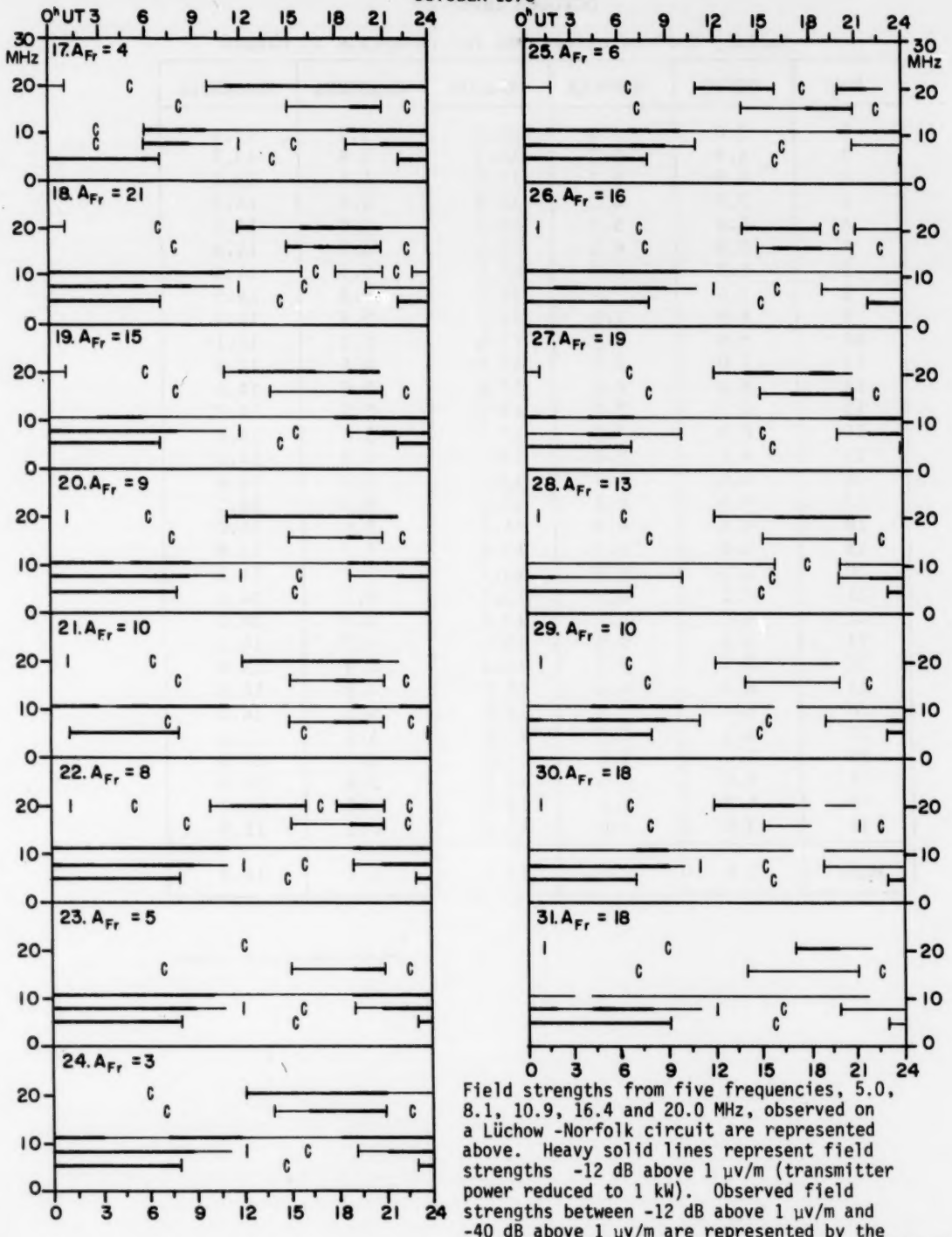
none

TRANSMISSION FREQUENCY RANGES -- NORTH ATLANTIC PATH



TRANSMISSION FREQUENCY RANGES -- NORTH ATLANTIC PATH

OCTOBER 1978



Field strengths from five frequencies, 5.0, 8.1, 10.9, 16.4 and 20.0 MHz, observed on a Lüchow -Norfolk circuit are represented above. Heavy solid lines represent field strengths -12 dB above 1 μv/m (transmitter power reduced to 1 kW). Observed field strengths between -12 dB above 1 μv/m and -40 dB above 1 μv/m are represented by the fine line. Adapted from Observations by Deutsche Bundespost

RADIO PROPAGATION QUALITY INDICES

OCTOBER 1978

Quality Indices calculated for reception at Lüchow

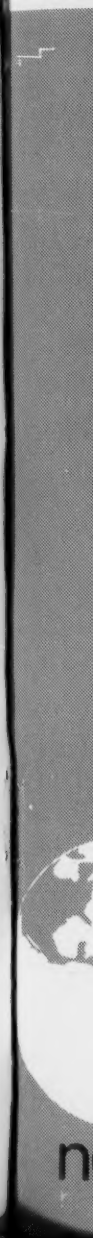
DAY	TOKYO	NORFOLK	MOSCOW	CANBERRA	BRACKWELL
1	3.0	5.0	12.7	3.7	13.1
2	4.8	5.3	12.7	3.8	13.7
3	4.8	5.7	13.6	4.4	13.6
4	5.0	6.1	13.5	4.8	14.2
5	5.0	5.3	12.8	4.5	14.0
6	5.8	6.3	13.6	4.7	14.0
7	5.7	6.7	13.6	5.5	14.5
8	5.4	7.4	14.1	5.5	14.5
9	6.9	7.1	13.9	5.3	14.4
10	5.9	7.5	13.6	5.1	14.1
11	7.0	7.3	13.8	4.6	14.5
12	6.4	6.9	13.8	5.6	14.6
13	6.7	7.0	13.9	5.5	14.8
14	6.9	7.2	13.3	5.0	14.6
15	6.1	7.5	13.2	4.9	14.6
16	6.6	6.9	13.7	6.0	14.4
17	7.6	6.1	13.7	5.6	14.3
18	4.4	6.8	14.2	5.6	14.0
19	4.4	5.9	13.6	4.3	13.8
20	6.3	6.5	13.7	4.7	14.2
21	5.2	6.7	13.7	4.5	14.6
22	4.7	6.4	13.4	4.8	14.2
23	5.6	6.9	13.7	4.7	14.3
24	5.7	6.7	13.5	4.9	13.9
25	6.2	6.6	14.0	4.9	14.3
26	6.9	7.3	12.8	5.1	14.2
27	5.1	6.6	12.8	4.5	13.0
28	5.4	6.8	13.1	3.7	13.9
29	6.4	5.6	13.6	5.4	14.0
30	4.0	4.9	12.4	3.3	12.8
31	3.8	6.0	12.3	2.1	11.9
MEAN	5.6	6.5	13.4	4.7	14.0

USCOMM-NOAA-ASHEVILLE, N.C. - 1/79/950

DECEM

So
co

Data
Explan



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DECEMBER 1978 Number 412 -- Part II

QB1.U57
No412, pt2
P-A STACKS

Solar-Geophysical Data comprehensive reports

Data for June 1978 -- May 1978 & Miscellanea

Explanation of Data Reports Issued as Number 402 (Supplement) February 1978

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NO.412 DECEMBER 1978

Part II (Comprehensive Reports)

DATA FOR
JUNE 1978
MAY 1978
& MISCELLANEA

NATIONAL GEOPHYSICAL AND SOLAR - TERRESTRIAL DATA CENTER
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Solar-Geophysical Data, 412 Part I (or Part II), pages, December 1978, U.S. Department of Commerce, (Boulder, Colorado, U.S.A. 80303).

SOLAR-GEOPHYSICAL DATA

No. 412

Issued in two parts

Helen E. Coffey, Editor

J. Virginia Lincoln, Chief
Solar-Terrestrial Physics Division

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A.5	Calcium Plage Drawings - McMath (or Catania)	403A 47	404A 40	405A 48	406A 54	407A 46	408A 50	409A 38	410A 48	411A 46	412A 40	
A.5a	Calcium Plage (McMath) and Sunspot Regions	403A108	404A 96	405A110	406A114	407A108	408A110	409A100	410A110	411A106	412A102	
A.5b	McMath Daily Calcium Plage Indices	403A114	404A104	405A119	406A124	407A118	408A119	409A110	410A120	411A116	412A114	
A.6	H-alpha Synoptic Charts	403A 44	404A 38	405A 46	406A 52	407A 44	408A 48	409A 38	410A 46	411A 44	412A 38	
A.6b	Synoptic Chart and Active Regions (Paris)	407B 4	408B 4	409B 4	410B 70	411B 4	412B 4					
A.7f	Helium D3 Chromosphere (Big Bear)	402A 29	403A 36	404A 29	405A 31	406A 35	407A 34	408A 37	409A 28	410A 37	411A 36	---
A.7g	Helium Synoptic Maps (KPNO)	402A 28	403A 35	404A 27	405A 32	406A 36	407A 36	408A 38	409A 29	410A 38	411A 35	412A 30
A.7h	Coronal Line Emission (Sac Peak)	403A 46	404A 40	405A 48	406A 54	407A 46	408A 50	409A 38	410A 48	411A 46	412A 40	
A.8aa	2800 MHz - Daily Values of Solar Flux (ARO-Ottawa)	402A 9	403A 9	404A 9	405A 9	406A 9	407A 9	408A 9	409A 9	410A 11	411A 11	412A 9
A.8ac	2800 MHz - Daily Values of Adj. Solar Flux (ARO-Ottawa)	402A 9	403A 9	404A 9	405A 9	406A 9	407A 9	408A 9	409A 9	410A 11	411A 11	412A 9
A.8g	Daily Values of Adjusted Solar Flux (APGL)	402A 9	403A 9	404A 9	405A 9	406A 9	407A 9	408A 9	409A 9	410A 11	411A 11	412A 9
A.9cb	8.6 mm Radio Maps of the Sun (NOSC - La Posta)	403A 47	404A 40	405A 48	406A 54	407A 46	408A 50	409A 38	410A 48	411A 46	---	
A.9d	2 cm Radio Maps of the Sun (NOSC - La Posta)	403A 47	404A 40	405A 48	406A 54	407A 46	408A 50	409A 38	410A 48	411A 46	---	
A.10a	169 MHz - Interferometric Observations (Nancay)	402A 16	403A 20	404A 17	405A 17	406A 19	407A 20	408A 19	409A 17	410A 23	411A 20	412A 18
A.10c	21 cm East-West Solar Scans (Fleurs)	402A 19	403A 23	404A 20	405A 20	406A 22	407A 23	409A 22	409A 20	412B 58	411A 23	412A 21
A.10d	43 cm East-West Solar Scans (Fleurs)	402A 20	403A 24	404A 21	405A 21	406A 23	407A 24	408A 23	409A 21	412B 59	411A 24	412A 22
A.10e	10.7 cm East-West Solar Scans (Ottawa-ARO)	402A 18	403A 22	404A 19	405A 19	406A 21	407A 22	408A 21	409A 19	410A 25	411A 22	412A 20
A.10f	3 cm East-West Solar Scans (Toyokawa)	402A 17	403A 21	404A 18	405A 18	406A 20	407A 21	408A 20	409A 18	410A 24	411A 21	412A 19
A.11k	Solar X-ray Radiation (SOLRAD 11)	403A116	404A108	405A122	406A129	407A123	408A123	410B 82	410A123	411A120	412A118	
A.11g	Solar X-ray (SMS/GOES)	402A 24	403A 29	404A 24	405A 29	406A 30	407A 29	408A 31	409A 25	410A 32	411A 29	412A 25
A.11h	Solar X-ray (OSO-8; 1975-057A)	403A 46	404A 40	405A 48	406A 54	407A 46	408A 50	409A 38	410A 48	411A 46	---	
A.11i	Solar X-ray (Columbia U.)											
A.12ba	Cosmic Ray Protons (Pioneers 6 & 7)	402A 30	---	---	---	---	---	---	---	---	---	---
A.12bb	Cosmic Ray Protons (Pioneers 8 & 9)	402A 31	---	---	---	---	---	408A 43	---	---	---	412A 29
A.12e	Energetic Solar Particles (IMP H & J)	407B 33	408B 62	410B100	411B 88							
A.12f	Energetic Solar Particles (GMS/SEM)	---	---	---	---	406A 44	---	408A 45	---	---	---	---
A.13a	Solar Wind (Pioneers 6 & 7)	402A 30	---	---	---	---	---	---	---	---	---	---
A.13ab	Solar Wind (Pioneers 8 & 9)	402A 31	---	---	---	---	---	408A 43	---	---	---	412A 29
A.13d	Solar Wind from IPS Measurements	402A 34	403A 37	404A 31	405A 37	406A 41	407A 35	408A 39	409A 33	410A 39	411A 37	412A 35
A.13e	Solar Plasma (IMP H & J)	408B 83	408B 61	409B 35	410B 67	411B 53	412B 44					
A.17	Interplanetary Magnetic Field (Pioneer 8)	---	---	---	---	---	---	---	---	---	---	---
A.17	Interplanetary Magnetic Field (Pioneer 9)	402A 31	---	---	---	---	---	408A 43	---	---	---	412A 29
A.17c	Inferred IP Magnetic Field	402A 32	403A 38	404A 32	406A 38	406A 38	407A 38	408A 40	409A 30	410A 40	411A 38	412A 32
A.18	Interplanetary Electric Field (Pioneer 8)	---	---	---	---	---	---	---	---	---	---	---
A.18	Interplanetary Electric Field (Pioneer 9)	402A 31	---	---	---	---	---	---	---	---	---	412A 29
B.	IONOSPHERIC (AND RADIO WAVE PROPAGATION) PHENOMENA											
B.52	Graphs of Transmission Frequency Range	403A148	404A144	405A158	406A171	407A168	408A168	409A142	410A160	411A158	412A162	
B.53	Quality Figures Based on Frequency Ranges	403A150	404A146	405A157	406A170	407A167	408A170	409A144	410A162	411A160	412A161	
C.	FLARE-ASSOCIATED EVENTS											
C.1a	Optical Observations Flares	402A 12	403A 12	404A 12	405A 12	406A 12	407A 12	408A 12	409A 12	410A 14	411A 14	412A 12
C.1ba	Optical Observations Flares (Standardized Data)	407B 8	408B 8	409B 8	410B 8	411B 8	412B 8					
C.1d	Flare Patrol Observations	402A 15	403A 19	404A 16	405A 16	406A 18	407A 19	408A 18	409A 16	410A 22	411A 19	412A 17
C.1d	Flare Patrol Observations	407A 22	408B 35	409B 24	410B 29	411B 25	412B 29					
C.1e	Flare Indices (by day)	407A 21	408B 34	409B 23	410B 28	411B 24	412B 28					
C.1f	Flare Indices (by Region)	408B 77	409B 47	410B 80	411B 66	412B 55						
C.3	Solar Radio Waves - Outstanding Occurrences	407B 23	408B 36	409B 25	410B 30	411B 26	412B 30					
	Solar Radio Waves - Fixed Frequencies - Selected	402A 21	403A 25	404A 22	405A 22	406A 24	407A 25	408A 24	409A 22	410A 26	411A 25	412A 23
C.3t	43.25, 80 and 160 MHz Selected Bursts (Culgoora)	405B 45	405B 48	406B 62	407B 67	407A151	408A152	409A129	410A147	411A144	412A148	
C.4a	Solar Radio Spectral Obs. (Fort Davis)	403A132	404A122	405A138	406A144	407B 52	408A138	411B 72	411B 75	411A135		
C.4d	Solar Radio Spectral Obs. (Culgoora)	404B 56	405B 40	406B 64	407B 59	407A139	408A138	409A115	410A139	412B 60	412A134	
C.4e	Solar Radio Spectral Obs. (Weissenau)	403A132	404A122	405A138	406A144	407A139	408A138	409A115	410A139	411A135	412A134	
C.4f	Solar Radio Spectral Obs. (Sagamore Hill)	403A132	404A122	405A138	406A144	407B 52	408A138	409A115	410A139	411A135	412A134	
C.4h	Solar Radio Spectral Obs. (Dwingeloo)	403A132	404A122	405A138	---	---	---	---	---	411A135		
C.4i	Solar Radio Spectral Obs. (Durnten)	403A132	404A122	405A138	406A144	407A139	408A138	409A115	410A139	411A135	412A134	
C.4j	Solar Radio Spectral Obs. (Manila)	406B 70	404A122	405A138	406A144	407B 52	408A138	409A115	410A139	411A135	412A134	
C.5e	Solar X-ray (SMS/GOES)	402A 26	403A 29	404A 26	---	406A 32	407A 29	408A 33	409A 27	410A 34	411A 31	412A 27
C.5f	Solar X-ray (Columbia U.)											
C.6	Sudden Ionospheric Disturbances	403A115	404A105	405A120	406A125	407A119	408A120	409A111	410A121	411A117	412A115	
D.	GEOMAGNETIC AND MAGNETOSPHERIC PHENOMENA											
D.1a	Geomagnetic Indices Kp, Kn, Ks, Km, Ap, aa, Cp	403A142	404A139	405A151	406A162	407A160	408A160	409A135	410A153	411A151	412A155	
D.1ba	27-day Chart of Kp Indices	403A144	404A141	405A153	406A164	407A162	408A162	409A137	410A155	411A153	412A157	
D.1c	27-day Chart of C9											
D.1d	Principal Magnetic Storms	403A145	404A143	405A156	406A167	407A165	408A165	409A140	410A158	411A156	412A160	
D.1e	Reduced Magnetograms			405A 39								
D.1f	Sudden Commencement and Solar Flare Effects	403A147	405B 55	406B 72	406A169	407A166	408A167	409A141	410A159	411A157	412A161	
D.1g	Equatorial Indices Dst	405B 53	405B 54	405A155	406A166	409B 80	408A164	409A139	410A157	411A155	412A159	
D.1h	Geomagnetic Substorm Log (Boulder)			404A 35	405A 38	406A 42	407A 41	408A 44	409A 34	410A 43	411A 41	412A 36
F.	COSMIC RAYS											
F.1a	Cosmic Ray Neutron Counts (Deep River)	403A138	404A138	405A150	407B 70	407A155	408A155	410B 98	410A152	411A150	412A154	
F.1b	Cosmic Ray Neutron Counts (Climax)	406B 73	406B 73	406B 73	406A161	411A 69	411A 69	411A 69				
F.1e	Cosmic Ray Neutron Counts (Alert)	403A138	404A138	405A150	407B 70	407A155	408A155	410B 98	410A152	411A150	412A154	
F.1f	Cosmic Ray Neutron Counts (Calgary)											
F.1g	Cosmic Ray Neutron Counts (Sulphur Mountain)											
F.1h	Cosmic Ray Neutron Counts (Thule)											
F.1i	Cosmic Ray Neutron Counts (Kiel)	403A138	404A138	405A150	406A161	407A155	408A155	409A134	410A152	411A150	412A154	
F.1j	Cosmic Ray Neutron Counts (Tokyo)	403A138	404A138	405A150	406A161	407A155	408A155	409A134	410A152	411A150	412A154	
F.1k	Cosmic Ray Neutron Counts (Kula)											
H.	MISCELLANEOUS											
H.60	IUWDS Alert Decisions	402A 5	403A 5	404A 4	405A 4	406A 4	407A 4	408A 5	409A 5	410A 5	411A 4	412A 4
H.62	Abbreviated Calendar Record	408B 70	409B 40	410B 72	411A 58	412B 48						

Notes:

"410A 48" listed under 1978 Aug means that the sunspot drawings for August 1978 were contained in *Solar-Geophysical Data* Number 410 - Part I, beginning on page 48.

A = Part I, B = Part II.

----- = no data available.
blank = data not yet received.

JUNE 1978 DATA

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ACTIVE REGIONS

CARRINGTON ROTATION 1668

(May 6 to June 3, 1978)

Region No.	Coordinates Lat.	Coordinates Long.	Age at CMP	IMP.	Spot-less Region	Region No. in Rotation 1667	Activity at West Limb
1	30°S	357°	>6	1	x		dispersed
2	17 N	355	>6	1	x		dispersed
3	17 N	348	>6	2			decreasing
4	22 N	347	>6	1	x		dispersed
5	26 S	347	>6	3			decreasing
6	17 N	333	-3	1	x		decreasing
7	18 S	331	>6	1	x		disappeared
8	29 S	325	>6	1	x		dispersed
9	14 S	313	+3	1	x		stable
10	36 S	305	+5	1	x		dispersed
11	20 N	304	>6	1	x		dispersed
12	19 S	299	+2	1	x		dispersed
13	24 S	296	-2	1	x		increasing
14	16 N	295	>6	2			decreasing
15	33 S	291	>6	1	x		dispersed
16	17 N	283	>6	3		(13)	decreasing
17	36 N	281	-4	1	x		stable
18	18 N	271	>6	1	x		decreasing
19	33 S	267	+2	1	x		disappeared
20	20 N	260	>6	1	x	(18)	decreasing
21	20 S	257	>6	3			stable
22	21 N	214	>6	3			decreasing
23	16 N	203	+2	1	x		stable
24	27 S	195	>6	2			decreasing
25	19 N	194	>6	1	x		decreasing
26	11 N	191	>6	2			decreasing
27	16 N	184	>6	1	x		decreasing
28	24 N	179	>6	1	x		decreasing
29	19 S	176	-6	1	x		(?)
30	16 N	174	>6	1	x		decreasing
31	18 S	171	+4	1	x		disappeared
32	14 S	158	+3	1	x		disappeared
33	31 S	151	+1	1	x		disappeared
34	15 S	141	-1	1	x		dispersed
35	28 N	131	-1	1	x		decreasing
36	30 S	131	>6	2		(39)	decreasing
37	23 S	115	-3	2			increasing
38	17 S	111	+5	2			decreasing
39	18 N	96	>6	1	x		dispersed
40	23 N	92	>6	3			decreasing
41	35 N	87	-3	2			decreasing
42	16 S	81	+2	2			stable
43	18 N	80	>6	5			decreasing
44	19 N	63	>6	1	x		decreasing
45	16 S	61	0	2			decreasing
46	26 S	61	-5	1	x		(?)
47	26 N	60	>6	3			decreasing
48	18 S	49	+2	1	x		stable
49	18 N	40	>6	3			decreasing
50	22 N	37	>6	3			decreasing
51	23 S	23	+6	2			decreasing
52	26 S	8	+1	3			increasing
53	28 S	2	>6	1	x		dispersed

ACTIVE REGIONS

CARRINGTON ROTATION 1669

(June 3 to June 30, 1978)

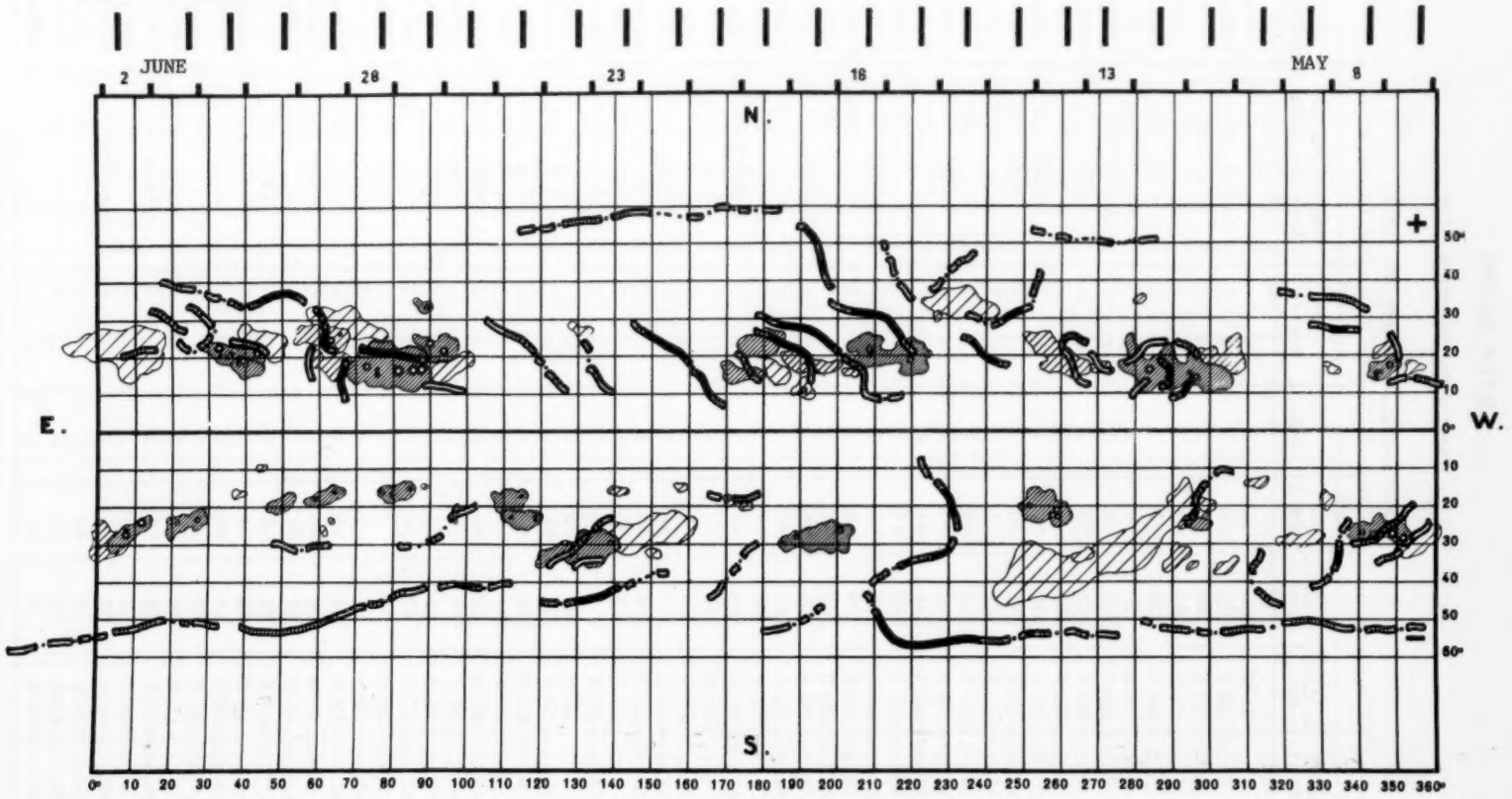
Region No.	Coordinates Lat.	Coordinates Long.	Age at CMP	IMP.	Spot-less Region	Region No. in Rotation 1668	Activity at West Limb
1	15°N	355°	+1	1	x		disappeared
2	28 S	353	>6	1	x		dispersed
3	18 N	340	>6	1	x		dispersed
4	21 S	340	+2	2			dispersed
5	14 S	336	-2	1	x		decreasing
6	16 N	328	-4	2			stable
7	15 S	320	>6	1	x		dispersed
8	23 N	306	>6	1	x	(11)	decreasing
9	13 N	305	0	1	x		disappeared
10	18 N	300	>6	1	x	(14)	dispersed
11	18 N	281	>6	2		(16)	decreasing
12	17 N	267	-1	2			decreasing
13	17 N	261	>6	1	x		decreasing
14	23 S	255	>6	1	x	(21)	decreasing
15	17 N	244	+1	4			stable
16	13 S	240	+5	2			dispersed
17	23 N	212	>6	1	x	(22)	dispersed
18	17 N	209	>6	3			decreasing
19	23 N	209	+4	1	x		dispersed
20	25 S	200	>6	1	x	(24)	decreasing
21	31 S	197	+6	1	x		dispersed
22	20 N	190	-1	2			dispersed
23	13 N	188	>6	1	x	(26+27)	decreasing
24	26 N	187	+2	2			decreasing
25	21 S	174	>6	1	x		dispersed
26	21 N	172	>6	1	x	(28)	decreasing
27	16 N	166	>6	1	x		dispersed
28	17 N	163	0	4			decreasing
29	20 N	151	>6	3			decreasing
30	12 N	149	>6	1	x		dispersed
31	26 N	143	>6	1	x		dispersed
32	13 N	136	+2	4			decreasing
33	23 S	116	+5	2			decreasing
34	24 S	110	>6	2		(37)	decreasing
35	34 S	109	>6	1	x	(36)	dispersed
36	21 N	98	>6	1	x	(40)	dispersed
37	13 S	97	>6	1	x		decreasing
38	13 N	97	0	2			decreasing
39	24 S	91	-3	1	x		dispersed
40	40 N	88	>6	1	x		disappeared
41	15 S	86	>6	1	x	(42)	decreasing
42	32 N	82	>6	2			dispersed
43	21 N	80	>6	2		(43)	decreasing
44	15 N	76	>6	1	x		dispersed
45	18 S	67	>6	1	x		dispersed
46	17 N	63	>6	5			decreasing
47	16 S	59	-1	2			decreasing
48	25 N	58	>6	3		(47)	decreasing
49	19 S	47	>6	7			decreasing
50	23 N	34	>6	3		(49+50)	decreasing
51	24 N	33	+2	4			decreasing
52	29 N	26	>6	2			decreasing
53	30 S	0	>6	1	x		dispersed

SYNOPTIC SOLAR MAP

CARRINGTON ROTATION 1668

MAY 6 TO JUNE 3, 1978

MEUDON OBSERVATORY

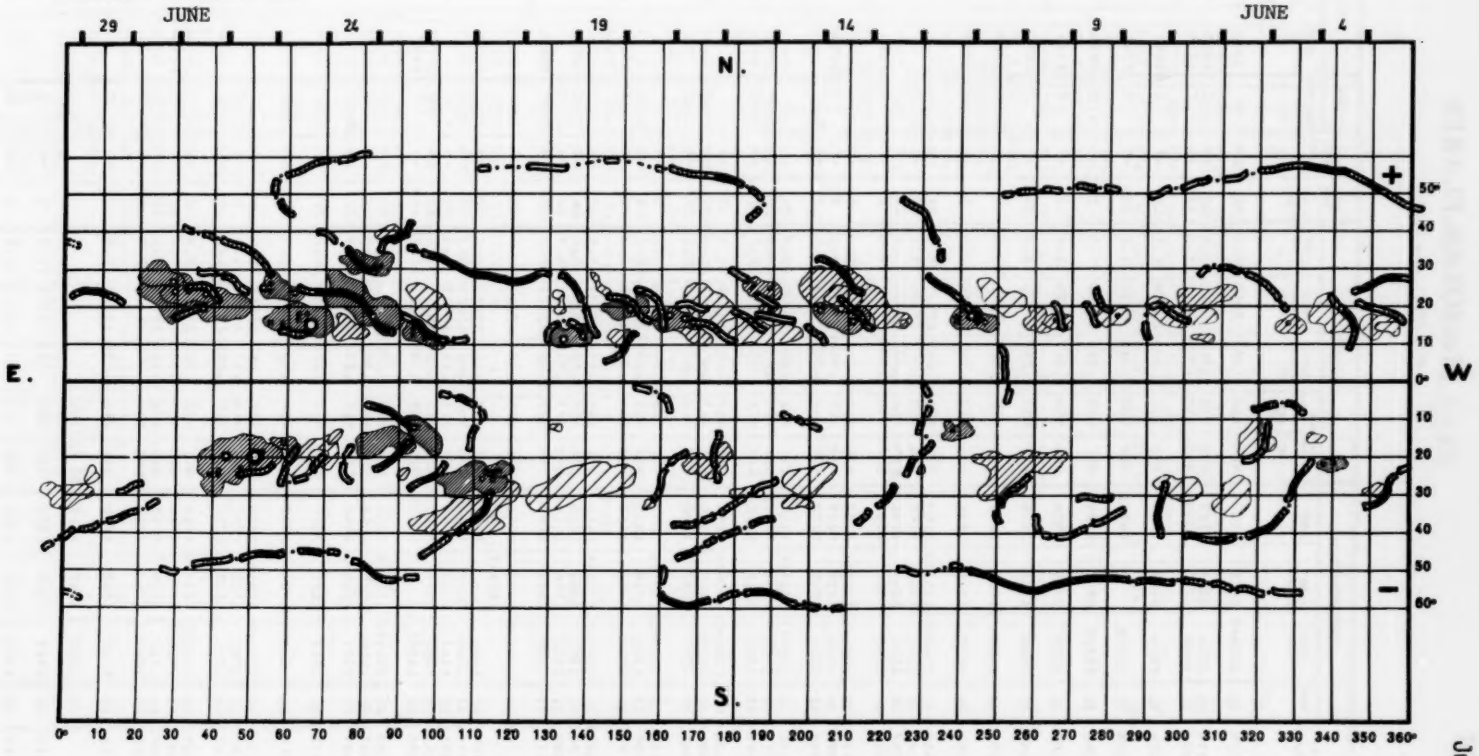


SYNOPTIC SOLAR MAP

CARRINGTON ROTATION 1669

JUNE 3 TO JUNE 30, 1978

MEUDON OBSERVATORY



7 Jun 78

Hα SOLAR FLARES

JUNE 1978

OBSERV-ATORY	OBSERVED UT				LOCATION					DURA-TION	IMPOR-TANCE	OBS.		MEASUREMENTS			REMARKS	
	DATE	START	MAX. PHASE	END	APPROX LAT.	APPROX LONG. DIST.	CENTRAL DISTANCE	McMATH PLAGE REGION	CMR DAY	MIN.		CONG	TYPE	TIME UT	MEAS. AREA Mill. of Disk	CORR AREA Sq. Deg.		
	JUN																	
GRP67474	01	0006+2	0012 0019	0039	N19	W08	.362	15319	31.4	63	1N				410	4.5	EJ	
HITK	01	0006	0012	0108	N19	W08	.362	15319	31.4	62	1B		C	0012	420	4.7	E	
VORO	01	0008	0019	0109	N19	W08	.362	15319	31.4	61	1N		C	0019	412	4.5	EJ	
475 BUCA	01	0649	0650	0700	N21	W10	.403	15319	31.5	11	-F		C	0650	86	1.0	E	Y5
476 BUCA	01	0735E		0800D	N22	W09	.412	15319	31.6	25D	-F		C	0745	53	.6	E	Y5
477 ZURI	01	0822E	0822	0824	N17	W60	.880	15314	27.8	2D	-F		P	0822	50	1.1		Y5
478 ZURI	01	0920	0924	0926	S16	W59	.867	15321	28.0	6	-F		C	0924	50	1.1		Y5
479 HONT	01	0940	1009	1016	S17	W59	.868	15321	28.0	36	-F		C	1009	50		E	Y5
480 HTPR	01	1002	1003	1011	S18	W26	.513	15332	30.5	9	-F		C	1003	10	.1		Y5
481 HTPR	01	1027	1030	1034	N20	W17	.447	15319	31.2	7	-F		C	1030	20	.2	E	Y5
GRP67482	01	1142+9	1152+2	1159	S16	W59	.867	15321	28.1	17	-N				25	.5	F	
RAMY	01	1142	1152	1159	S16	W59	.867	15321	28.1	17	-B	3	C		22		F	
KANZ	01	1143	1154	1201	S15	W61	.882	15321	27.9	18	-F		C					
HTPR	01	1151	1153	1153	S17	W56	.843	15321	28.3	2	-F		C	1153	30	.5		
GRP67483	01	1214+0	1214+1	1223	N26	W41	.740	15314	29.4	9	-N							
ZURI	01	1214	1214	1222	N28	W42	.760	15314	29.4	8	-F		C	1214	60	1.0		
RAMY	01	1214	1215	1223	N25	W40	.725	15314	29.5	9	-B	3	C		21			
GRP67484	01	1300+1	1315+4	1334	S24	W84	.995	15331	26.2	34	-N							
CATA	01	1300	1315	1335D	S25	W90	1.000	15331	25.8	35D	1N	2	P	1315	56		T	
KANZ	01	1301	1319	1332	S23	W78	.981	15331	26.7	31	-N		C					
GRP67485	01	1326+1	1326+1	1353	N21	W17	.459	15319	31.3	27	-N							
RAMY	01	1326	1326	1354	N21	W17	.459	15319	31.3	28	-B	3	C		25		F	
KANZ	01	1327	1327	1352	N22	W18	.480	15319	31.2	25	-F		C				E	
GRP67486	01	1328+1	1329+0	1333	N21	W68	.938	15314	27.5	5	-N				20			
RAMY	01	1328	1329	1333	N22	W70	.950	15314	27.3	5	-B	3	C		16		F	
HTPR	01	1329	1329	1332	N20	W66	.926	15314	27.6	3	-N		C	1329	20	.4	E	
GRP67487	01	1350+5	1356+4	1410	S24	W90	1.000	15331	25.8	20	-N				50			
HTPR	01	1350	1356	1406	S24	W90	1.000	15331	25.8	16	-N		C	1356	50			
KANZ	01	1352	1356	1414	S23	W78	.981	15331	26.7	22	-N		C					
CATA	01	1355	1400	1400D	S25	W90	1.000	15331	25.8	5D	1N	2	P	1400	56		T	
GRP67488	01	1448+6	1449 1510+7	1541	N21	W16	.450	15319	31.4	53	-N				100	1.1		
HTPR	01	1448		1511D	N21	W17	.459	15319	31.3	23D	-N		C	1501	130	1.3	E	
RAMY	01	1448	1510	1540	N21	W18	.468	15319	31.3	52	-B	3	C		116		F	
RAMY	01	1448	1449	1540	N21	W18	.468	15319	31.3	52	-N	3	C		259		F	
KANZ	01	1450	1517	1643	N22	W16	.462	15319	31.4	113	1N		C				F	
MCMA	01	1457E		1541D	N21	W15	.441	15319	31.5	44D	-N		P	1457	80	.9	E	
GRP67489	01	1514+7	1525+1	1551	S15	W62	.890	15321	28.0	37	-N						F	
KANZ	01	1514	1525	1600	S15	W63	.897	15321	27.9	46	-N		C					
RAMY	01	1521	1526	1542	S16	W62	.891	15321	28.0	21	-N	3	C		16		F	
490 RAMY	01	1600	1602	1627	N21	W19	.478	15319	31.2	27	-N	3	C		42		F	Y5
491 PALE	01	1658	1700	1702	S17	W64	.906	15321	27.9	4	-N	3	C		16		DE	Y5
GRP67492	01	1700+0	1701+2	1706	N21	W17	.459	15319	31.4	6	-F						F	
RAMY	01	1700	1701	1704	N21	W19	.478	15319	31.3	4	-N	3	C		20		F	
KANZ	01	1700	1703	1707	N22	W16	.462	15319	31.5	7	-F		C					
GRP67493	01	1730+2	1738+6	1748	N21	W72	.959	15314	27.3	18	-N				20			
MCMA	01	1730	1738	1750	N20	W70	.948	15314	27.5	20	-N		C	1738	30	.6	E	
RAMY	01	1732	1739	1747	N22	W72	.959	15314	27.3	15	-N	3	C		25		F	
PALE	01	1743	1744	1748	N21	W74	.967	15314	27.2	5	-N	3	C		14		DE	
494 PALE	01	1743	1743	1750	S17	W64	.906	15321	27.9	7	-N	3	C		12		DE	Y5
	01	1855	1917	NO FLARE PATROL														
495 PALE	01	1917	1917	1923	S17	W65	.913	15321	27.9	6	-N	3	C		12		DE	Y5
496 PALE	01	1928	1928	1937	N20	W20	.477	15319	31.3	9	-N	3	C		21		DE	Y5

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OBSERV-ATORY	OBSERVED UT				LOCATION					DURA-TION	IMPOR-TANCE	OBS.		MEASUREMENTS			REMARKS	
	DATE	START	MAX. PHASE	END	APPROX LAT.	APPROX MER. DIST.	CENTRAL DISTANCE	McMATH PLAGE REGION	CMP. DAY	MIN.		CONC	TYPE	TIME UT	MEAS. AREA Mill. of Disk	CORR AREA Sq. Deg		
	JUN																	
GRP67497	01	1939+0	1939+2	1945	N17	W66	.923	15314	27.9	6	-N				25		D	
MCMA	01	1939	1941	1946	N18	W66	.924	15314	27.9	7	-N		C	1941	30	.9	D	
PALE	01	1939	1939	1943	N16	W67	.928	15314	27.8	4	-N	3	C		16		DE	
498 MCMA	01	1945	1952	1959D	N16	E37	.645	15333	4.6	14D	-N		C	1952	30	.4	EK	Y5
499 PALE	01	1947	1947	1952	S17	W66	.920	15321	27.9	5	-N	3	C		15		DE	Y5
	01	1959	2016	NO FLARE PATROL														
	01	2026	2037	NO FLARE PATROL														
	01	2043	2240	NO FLARE PATROL														
500 PALE	01	2113E	2113U	2115D	N23	W45	.763	15314	29.5	2D	1B	3	C		254		FDE	Y5
	01	2249	2310	NO FLARE PATROL														
	01	2325	2331	NO FLARE PATROL														
	01	2342	2349	NO FLARE PATROL														
	01	2351	0035	NO FLARE PATROL														
	02	0114	0119	NO FLARE PATROL														
	02	0251	0326	NO FLARE PATROL														
501 TEHR	02	0258	0303	0319	N25	W46	.780	15314	29.7	21	-B	2	C		127			Y5
	02	0332	0333	NO FLARE PATROL														
	02	0336	0337	NO FLARE PATROL														
GRP67502	02	0652+3	0730 0822+2	0845	N26	W30	.633	15319	31.0	113	-F							
HTPR	02	0652	0730	0845	N26	W32	.652	15319	30.9	113	-F		C	0730	40	.4		
KANZ	02	0655	0824	0840	N27	W30	.642	15319	31.0	105	-F		C					
HTPR	02	0815	0822	0835	N22	W31	.612	15319	31.0	20	-F		C	0822	10	.1		
ZURI	02	0819E	0822	0850	N26	W30	.633	15319	31.1	31D	-N		P	0822	60	.8		
GRP67503	02	0750+0	0754	0800	S17	W77	.976	15321	27.6	10	-N							
MONT	02	0750	0754	0759	S18	W78	.980	15321	27.5	9	1N		C	0754	240			
KANZ	02	0750		0801	S17	W76	.972	15321	27.6	11	-N		C				T	
504 HTPR	02	0843	0844	0849	S14	W78	.979	15321	27.5	6	-F		C	0844	20			Y5
505 HTPR	02	0952	0955	0957	S14	W78	.979	15321	27.6	5	-F		C	0955	20			Y5
506 ZURI	02	1002	1016	1018	S17	W50	.787	15335	29.7	16	-F		C	1016	50	.9		Y5
GRP67507	02	1102+1	1106 1110+2	1122	S16	W79	.983	15321	27.5	20	1N							
KANZ	02	1051	1111	1122	S16	W75	.968	15321	27.8	31	1N		C					
ZURI	02	1102	1106	1110	S14	W81	.988	15321	27.4	8	-F		C	1106	50			
HTPR	02	1103	1110	1118	S17	W80	.986	15321	27.5	15	-N		C	1110	150			
ZURI	02	1108	1112	1128	S18	W78	.980	15321	27.6	20	2N		C	1112	260			
508 KANZ	02	1520E		1527D	N17	E29	.553	15333	4.8	7D	-F		C					Y5
GRP67509	02	1645+2	1647+2	1655	N25	W56	.865	15314	29.5	10	-N				25	.5		
KANZ	02	1645	1649	1653	N27	W55	.862	15314	29.6	8	-F		C					
PALE	02	1646	1647	1658	N23	W56	.860	15314	29.5	12	-N	3	C		19		DE	
RAMY	02	1647	1648	1655	N25	W56	.865	15314	29.5	8	-B	2	C		26		F	
510 RAMY	02	1648	1648	1652	N21	W32	.616	15319	31.3	4	-N	2	C		48		F	Y5
511 KANZ	02	1650	1658	1701	S22	E26	.547	15341	4.7	11	-F		C				DG	Y5
512 PALE	02	1800	1809	1824	N23	W57	.868	15314	29.5	24	-N	3	C		17			Y5
513 PALE	02	1803	1803	1902	N23	W43	.743	15319	30.5	59	-N	3	C		19		DE	Y5
	02	1832	2035	NO FLARE PATROL														
514 PALE	02	1935	1937	1953	S17	W79	.983	15321	27.9	18	-N	3	C		36		FDE	Y5
515 PALE	02	2121	2122	2138D	S17	W80	.986	15321	27.9	17D	-B	3	C		15		DE	Y5
	02	2218	2329	NO FLARE PATROL														
516 PALE	02	2307E	2313U	2330D	N25	W60	.894	15314	29.5	23D	-N	3	C		72		FDE	Y5
	02	2330	2344	NO FLARE PATROL														
	02	2345	0009	NO FLARE PATROL														

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OBSERVATORY	OBSERVED UT				LOCATION					DURATION	IMPORTANCE	OBS.		MEASUREMENTS			REMARKS
	DATE	START	MAX. PHASE	END	APPROX LAT.	APPROX LONG. DIST.	CENTRAL DISTANCE	McMATH PLAGE REGION	CMP. DAY	MIN.		COND	TYPE	TIME UT	MEAS. AREA Mill. of Disk	CORR. AREA Sq. Deg.	
	JUN																
	03	0017	0036	NO FLARE PATROL													
	03	0240	0450	NO FLARE PATROL													
	03	0527	0533	NO FLARE PATROL													
517 TEHR	03	0535	0542	0551	N26	W65	.926	15314	29.4	16	-B	1	C		95		Y5
518 HTPR	03	0738	0743	0750	N28	W63	.918	15314	29.6	12	-N		C	0743	20	.4	Y5
GRP67519	03	0801E	0828+2	0900D	S14	W87	.999	15321	27.8	59	?F						
KANZ	03	0801E	0828	0900D	S15	W84	.995	15321	28.0	59D	F		C				
	IMP.8 IMP.2																
CATA	03	0825E	0830	0845D	S14	W90	1.000	15321	27.6	20D	2F	1	P	0830	196		
520 HTPR	03	1408	1408	1412	N22	W42	.728	15319	31.4	4	-F		C	1408	20	.3	Y5
	03	1711	1719	NO FLARE PATROL													
	03	1731	1746	NO FLARE PATROL													
	03	1758	1810	NO FLARE PATROL													
	03	1857	1906	NO FLARE PATROL													
	03	2015	2202	NO FLARE PATROL													
521 CULG	03	2211	2215	2235	N28	W72	.963	15314	29.5	24	-N		C	2215	30		Y5
	03	2300	2310	NO FLARE PATROL													
	04	0349	0350	NO FLARE PATROL													
522 KANZ	04	0814		0901	N14	W11	.309	15339	3.5	47	-F		C				GL Y5
523 KANZ	04	0857	0857	0901	S24	W25	.557	15337	2.5	4	-F		C				E Y5
	04	1814	0110	NO FLARE PATROL													
	05	0210	0250	NO FLARE PATROL													
524 TACH	05	0314E		0400D	N21	W64	.913	15319	31.3	46D	1N		V	0315	194	4.7	E Y5
GRP67525	05	0729E	0736+2 0750+0	0812	N23	W65	.922	15319	31.4	43	1B				290		
KANZ	05	0729E	0736	0812	N24	W65	.923	15319	31.4	43D	1B		C				
MONT	05	0729E	0736	0812	N23	W68	.939	15319	31.2	43D	1B		C	0736	300		
TEHR	05	0730E	0738	0803	N21	W63	.906	15319	31.6	33D	1B	2	C		286		FDE
ATHN	05	0740E	0750	0817	N22	W65	.921	15319	31.4	37D	-B	1		0750	65	1.6	
CATA	05	0750E	0750	0800D	N23	W66	.928	15319	31.4	10D	1B	2	P	0750	196		
526 HEUD	05	0954	0958	1000D	N23	W65	.922	15319	31.5	6D	-N		C				Y5
GRP67527	05	1057	1102	1110	N24	W68	.940	15319	31.4	13	1N						D
KANZ	05	1057	1102	1110	N24	W66	.929	15319	31.5	13	1N		C				
KHAR	05	1104E	1104	1106D	N24	W70	.950	15319	31.2	4D	-F		P				D
GRP67528	05	1247+3	1318+0 1331+0	1345	N22	W69	.944	15319	31.4	58	1B				170		EK
ZURI	05	1247	1331	1333D	N23	W68	.939	15319	31.4	46D	1N		P	1331	190		
MCMA	05	1250E	1318	1345	N22	W70	.949	15319	31.3	55D	1N		C	1318	50	2.0	EK
RAMY	05	1250	1318	1354	N21	W72	.958	15319	31.1	64	1B	3	C		113		DE
MCMA	05	1250E	1331	1345	N22	W70	.949	15319	31.3	55D	1N		C	1331	60	2.4	EK
TEHR	05	1308	1312	1340	N21	W65	.919	15319	31.7	32	1B	3	C		222		
CATA	05	1315	1330	1330D	N23	W68	.939	15319	31.5	15D	1B	2	P	1330	168		
529 VORO	05	2126	2127	2129	N24	W75	.972	15319	31.3	3	-F		C	2127	27		Y5
GRP67530	05	2217+1	2219+2	2228	N22	W77	.978	15319	31.2	11	1F				80		E
CULG	05	2217	2221D	2221D	N23	W76	.975	15319	31.2	4D	1F		P	2221	80		
VORO	05	2218	2219	2228	N22	W78	.982	15319	31.1	10	1F		C	2219	90		E
GRP67531	06	1107+4	1117	1148	N18	E39	.674	15342	9.4	41	-F				20	.3	D
HTPR	06	1107		1141D	N18	E37	.651	15342	9.2	34D	-F		C	1113	10	.1	
MCMA	06	1111	1117	1150	N18	E39	.674	15342	9.4	39	-F		C	1117	25	.4	D
KANZ	06	1117E		1145	N18	E39	.674	15342	9.4	28D	-F		C				
GRP67532	06	1217+8	1217+1	1222	N21	W80	.987	15319	31.5	5	-F						
KANZ	06	1217E	1217	1223	N21	W81	.989	15319	31.4	6D	-F		C				
HTPR	06	1217	1218	1220	N22	W80	.987	15319	31.5	3	-F		C	1218	20		
533 VORO	06	2113	2114	2115	N22	W90	1.000	15319	31.1	2	-F		P	2114	27		D Y5
534 KANZ	07	0753	0800	0811	N18	E41	.696	15344	10.4	18	-F		C				Y5

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OBSERV-ATORY	OBSERVED UT				LOCATION					DURA-TION	IMPOR-TANCE	OBS		MEASUREMENTS			REMARKS	
	DATE JUN	START	MAX. PHASE	END	APPROX LAT.	APPROX MER. DIST.	CENTRAL DISTANCE	McMATH PLAGE REGION	CMR DAY	MIN.		CONF	TYPE	TIME UT	MEAS. AREA Mill. of Disk	CORR AREA Sq. Deg		
GRP67535	07	0805+0	0810+1	0843	S24	W63	.910	15337	2.6	38	-N		C					
KANZ	07	0805	0811	0843	S24	W63	.910	15337	2.6	38	-B		C					
CATA	07	0805E	0810	0835D	S24	W64	.916	15337	2.5	30D	-N	1	P	0810	56			
536 KHAR	07	1041E		1055D	S28	W66	.933	15337	2.5	14D	-F		P	1045			D	Y5
537 PALE	07	1735	1736	1737	S27	W69	.948	15337	2.6	2	-N	3	C		12		DE	Y5
538 CULG	07	2219	2226	2238	S28	W73	.966	15337	2.5	19	1N		C	2226	80			Y5
539 CULG	08	0020	0027U	0029	S28	W73	.966	15337	2.5	9	-F		C	0027	20			Y5
540 CULG	08	0236E	0238	0259	N16	E88	.999	15354	14.7	23D	?N		P	0238	50		JT	Y5
	IMP-1 NO † MITK1																	
GRP67541	08	1110	1112	1126	N18	E81	.989	15354	14.5	16	-N						D	
RAMY	08	1110	1112	1126	N18	E77	.977	15354	14.2	16	-N	3	C		15			
KHAR	08	1113E	1113	1120D	N18	E85	.996	15354	14.8	7D	-F		P				D	
542 KANZ	08	1606E		1606D	S24	E31	.623	15345	11.0		-N		C				EG	Y5
543 KANZ	08	1649	1649	1653D	N17	E74	.964	15354	14.3	4D	-F		C				D	Y5
	08	2045	2058	NO FLARE PATROL														
GRP67544	09	0730	0734	0746	S22	W90	1.000	15337	2.6	16	-F				50		W	
ZURI	09	0730	0734	0742	S22	W90	1.000	15337	2.6	12	-F		C	0734	50		W	
CATA	09	0740E	0740	0750	S23	W90	1.000	15337	2.6	10D	1F	1	P	0740	56			
	10	0610	0630	NO FLARE PATROL														
	10	0747	0750	NO FLARE PATROL														
	10	0810	0813	NO FLARE PATROL														
	10	0840	0849	NO FLARE PATROL														
	10	1109	1111	NO FLARE PATROL														
545 RAMY	10	1221	1222	1254	N15	W79	.983	15333	4.6	33	-N	3	C		8			Y5
GRP67546	10	1253+0	1254+2	1303	S13	E22	.432	15348	12.2	10	-F							
RAMY	10	1253	1254	1300	S12	E23	.438	15348	12.3	7	-N	3	C		32			
MEUD	10	1253	1256	1305	S14	E22	.440	15348	12.2	12	-F		C					
547 MCMA	10	1548	1559	1608	N16	E19	.413	15352	12.1	20	-N		C	1559	25	.3	DL	Y5
	10	2102	2107	NO FLARE PATROL														
	11	0105	0111	NO FLARE PATROL														
	11	0115	0118	NO FLARE PATROL														
	11	0130	0154	NO FLARE PATROL														
548 MANI	11	0204	0206	0214	N14	W50	.780	15351	7.3	10	-F		P		40	.6		Y5
549 TACH	11	0345E		0526D	N20	E90	1.000	15360	17.9	101D	1F		P	0350	354		E	Y5
550 ABST	11	0750E	0752	0759D	N18	E09	.335	15352	12.0	9D	-F		P	0752	87	.9	DJ	Y5
GRP67551	11	1040	1100	1140	N16	E90	1.000	15360	18.2	60	-N						A	
CATA	11	1040	1100	1140	N16	E90	1.000	15360	18.2	60	1N	2	C	1100	112		A	
MCMA	11	1052E		1115D	N17	E90	1.000	15360	18.2	23D	-N		C					
552 RAMY	11	1338	1339	1422	S32	E52	.856	15356	15.5	44	-F	3	C		17			Y5
	12	0135	0144	NO FLARE PATROL														
	12	0202	0235	NO FLARE PATROL														
	12	0241	0252	NO FLARE PATROL														
553 PALE	12	0311	0315	0323	N16	W02	.267	15352	12.0	12	-N	3	C		134		FDE	Y5
	12	0401	0434	NO FLARE PATROL														
GRP67554	12	0534E		0540	N17	W04	.289	15352	11.9	6	-F						DZ	
ABST	12	0534E	0536	0536D	N18	W04	.306	15352	11.9	2D	-F		P	0536	87	1.0	DZ	
MEUD	12	0535E	0535	0540	N17	W05	.294	15352	11.9	5D	-F		C				D	
555 CATA	12	0645	0645	0645D	N17	W05	.294	15352	11.9		-B	2	P	0645	84	.9		Y5
556 MEUD	12	0648	0650	0653	N17	W05	.294	15352	11.9	5	-F		C					Y5
557 ZURI	12	0909	0923	0937	N21	W18	.384	15352	11.6	28	-F		C	0923	50	.6		Y5

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OBSERV-ATORY	OBSERVED UT				LOCATION					DURATION	IMPORTANCE	OBS.		MEASUREMENTS			REMARKS
	DATE	START	MAX. PHASE	END	APPROX. LAT.	APPROX. MER. DIST.	CENTRAL DISTANCE	McMATH PLAGE REGION	CNR. DAY	MIN.		CONC.	TYPE	TIME UT	MEAS. AREA Mill. of Disk	CORR. AREA Sq. Deg.	
	JUN																
558 ABST	12	1040	1042	1046D	N19	W06	.330	15352	12.0	6D	-F		P	1042	87	.9	D Y5
559 KHAR	12	1107E		1126D	N04	E90	1.000	0	19.2	19D	-F		P	1107			CH Y5
GRP67560	12	1135+1	1136+3	1153D	N17	W07	.305	15352	12.0	18	-F				35	.4	
ZURI	12	1135	1139	1153	N18	W07	.320	15352	12.0	18	-F		C	1139	40		
RAMY	12	1136	1136	1224	N17	W07	.305	15352	12.0	48	-N	3	C		28		
561 KHAR	12	1147E		1214D	N15	W90	1.000	15355	5.7	27D	?N		P	1153			C Y5
	IMP.1 NO ZURI2 RAMY2																
GRP67562	12	1246+8	1258+0 1306	1314	N17	W07	.305	15352	12.0	28	-N						J
ZURI	12	1246	1306	1314	N18	W08	.327	15352	11.9	28	-N		C	1306	50	.6	
LVOV	12	1252	1258	1307	N16	W06	.283	15352	12.1	15	-F		C	1258	150	1.6	J
RAMY	12	1254	1258	1316	N17	W07	.305	15352	12.0	22	-B	3	C		53		
563 RAMY	12	1637	1637	1720	N17	W09	.319	15352	12.0	43	-B	3	C		156		F Y5
564 PALE	12	1818	1821	1834	N16	W10	.313	15352	12.0	16	-B	3	C		88		FDE Y5
565 PALE	12	1845	1846	1859	S33	E38	.756	15356	15.6	14	-N	3	C		19		DE Y5
566 PALE	12	1855	1859	1903	N16	W11	.322	15352	12.0	8	-N	3	C		66		DE Y5
567 PALE	12	2012	2012	2017	N16	W11	.322	15352	12.0	5	-N	3	C		28		DE Y5
568 PALE	12	2035	2042	2045	N16	W11	.322	15352	12.0	10	-N	3	C		90		DE Y5
	12	2107	2108	NO FLARE PATROL													
569 PALE	12	2116	2121	2136	N16	W12	.332	15352	12.0	22	-B	3	C		109		FDE Y5
570 PALE	12	2239	2242	2250	N16	W13	.342	15352	12.0	11	-B	3	C		109		FDE Y5
	12	2337	2349	NO FLARE PATROL													
571 PALE	12	2352	2357	0000	N16	W13	.342	15352	12.0	8	-N	3	C		62		FDE Y5
572 HANI	13	0136E	0137	0146D	N16	W16	.374	15352	11.9	10D	-N		V		90	1.0	Y5
	13	0137	0146	NO FLARE PATROL													
573 PALE	13	0155	0156	0210D	N16	W15	.362	15352	12.0	15D	-B	3	C		153		DE S Y5
	13	0203	0207	NO FLARE PATROL													
574 TEHR	13	0444	0452	0525	N17	W15	.374	15352	12.1	41	-N	2	C		159		Y5
575 BUCA	13	0706E		0717	N17	W19	.419	15352	11.9	11D	-F		C	0706	43	.5	D Y5
GRP67576	13	0727	0733	0802	N18	E71	.950	15360	18.6	35	1F						D
ABST	13	0727	0733	0758	N18	E70	.944	15360	18.6	31	1F		C	0733	79		D
ZURI	13	0747E	0747	0805D	N19	E73	.960	15360	18.6	18D	-F		P	0747	60		
GRP67577	13	0830E	0834+6	0853	N18	W20	.441	15352	11.9	23	-N				110	1.2	E
LOCA	13	0830E	0840	0910	N17	W19	.419	15352	11.9	40D	-N		V	0840	82	.9	
ABST	13	0833E	0834	0844	N18	W20	.441	15352	11.9	11D	-F		P	0834	148	1.7	E
TEHR	13	0836E	0837	0853	N18	W20	.441	15352	11.9	17D	-N	3	C		96		
578 TEHR	13	1112	1114	1125	N17	W22	.455	15352	11.8	13	-B	2	C		64		Y5
GRP67579	13	1400	1400 1408	1410D	N16	W22	.446	15352	11.9	10	-B						F
CATA	13	1400	1400	1410D	N17	W22	.455	15352	11.9	10D	-B	2	P	1400	45	.5	
RAMY	13	1407E	1408	1410D	N16	W22	.446	15352	11.9	3D	-B	3	C		21		F
GRP67580	13	1505	1507	1520	N16	E59	.867	15360	18.1	15	-N						
RAMY	13	1505	1507	1517	N15	E58	.857	15360	18.0	12	-N	3	C		28		F
HCMA	13	1515E		1522D	N17	E60	.876	15360	18.1	7D	-N		P	1515	60	1.3	E
GRP67581	13	1510+0	1511+4	1520	N16	W25	.485	15352	11.8	10	-B				50	.6	
CATA	13	1510	1515	1515D	N16	W25	.485	15352	11.8	5D	-B	2	P	1515	39	.4	
RAMY	13	1510	1511	1518	N16	W23	.459	15352	11.9	8	-B	3	C		38		F
HCMA	13	1515E		1522D	N17	W25	.492	15352	11.8	7D	-N		P	1517	60	.7	E

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OBSERVATORY	OBSERVED UT				LOCATION					DURATION	IMPORTANCE	OBS.		MEASUREMENTS			REMARKS	
	DATE	START	MAX. PHASE	END	APPROX LAT.	APPROX MER. DIST.	CENTRAL DISTANCE	McMATH PLAGE REGION	CMR DAY	MIN.		CONF.	TYPE	TIME UT	MEAS. AREA Mill. of Disk	CORR AREA Sq. Deg.		
	JUN																	
GRP67582	13	1716+1	1717+1	1722	N16	W24	.472	15352	11.9	6	-B				40	.5	D	
PALE	13	1716	1717	1720	N16	W24	.472	15352	11.9	4	-B	3	C		47		DE	
RAMY	13	1717	1718	1722	N16	W24	.472	15352	11.9	5	-B	3	C		38			
HCMA	13	1720E	1720	1724	N17	W25	.492	15352	11.8	40	-N		C	1720	25	.3	D	
GRP67583	13	1737+2	1739+1	1750	N16	W24	.472	15352	11.9	13	-B				45	.5	D	
PALE	13	1737	1739	1750	N16	W24	.472	15352	11.9	13	-B	3	C		50		DE	
HCMA	13	1739	1740	1742D	N17	W25	.492	15352	11.9	30	-B		C	1740	35	.4	D	
584 PALE	13	1820	1821	1823	N15	W25	.477	15352	11.9	3	-B	3	C		35		DE	Y5
GRP67585	13	1858	1859	1909D	N16	W26	.497	15352	11.8	11	-B				35	.4		
RAMY	13	1858	1859	1909D	N16	W26	.497	15352	11.8	110	-B	3	C		38		F	
HCMA	13	1900E		1902D	N17	W27	.517	15352	11.8	2D	-N		C	1900	25	.3	D	
586 PALE	13	1919	1920	1930	N15	W26	.490	15352	11.9	11	-B	3	C		140		HDE	Y5
587 PALE	13	2002	2004	2008	N15	W26	.490	15352	11.9	6	-N	3	C		36		DE	Y5
GRP67588	13	2016+2	2018+1	2053	N15	W26	.490	15352	11.9	37	-B				90	1.0	H	
RAMY	13	2016	2019	2053	N16	W26	.497	15352	11.9	37	-B	3	C		72			
PALE	13	2018	2018	2053	N15	W26	.490	15352	11.9	35	-B	3	C		114		HDE	
GRP67589	13	2121+0	2124+0	2143	N15	W26	.490	15352	11.9	22	1B				200	2.3	H	
PALE	13	2121	2124	2141	N15	W27	.503	15352	11.9	20	1B	3	C		206		HDE	
RAMY	13	2121	2124	2145	N16	W26	.497	15352	11.9	24	-B	3	C		190			
590 PALE	13	2218	2218	2223	N15	W27	.503	15352	11.9	5	-N	3	C		36		HDE	Y5
591 PALE	13	2320	2320	2325	N15	W28	.517	15352	11.9	5	-N	3	C		20		DE H	Y5
592 ABST	14	0545	0547	0553	N19	E55	.837	15360	18.4	8	-F		P	0547	96	1.8	D	Y5
GRP67593	14	0555+0	0555+4	0605	N16	W32	.573	15352	11.8	10	-N				60	.7		
CATA	14	0555	0555	0605	N15	W32	.568	15352	11.8	10	-B	2	C	0555	56	.7		
HTPR	14	0555	0559	0605	N17	W33	.591	15352	11.8	10	-N		C	0559	60	.7		
594 ABST	14	0629	0631	0635	N18	E54	.826	15360	18.3	6	-F		C	0631	87	1.6	D	Y5
GRP67595	14	0721>9	0731+2	0747	N16	W34	.599	15352	11.8	26	-B							
ZURI	14	0721	0731	0753	N16	W33	.586	15352	11.8	32	-B		C	0731	80	1.0		
TEHR	14	0731	0733	0740	N16	W35	.611	15352	11.7	9	-B	2	C		32			
596 MEUD	14	0845	0846	0848	N17	W34	.604	15352	11.8	3	-F		C				D	Y5
GRP67597	14	0905+5	0909+2	0917	N16	W34	.599	15352	11.8	12	-N				50	.6		
ZURI	14	0905	0909	0917	N16	W34	.599	15352	11.8	12	-N		C	0909	50	.6		
MEUD	14	0910	0911	0915	N17	W34	.604	15352	11.8	5	-N		C					
CATA	14	0910	0910	0920	N15	W35	.606	15352	11.8	10	-B	2	C	0910	56	.7		
598 ZURI	14	0909	0911	0917	N17	E58	.859	15360	18.7	8	-F		C	0911	100	2.0		Y5
599 ABST	14	1035	1039	1100D	N17	E48	.765	15360	18.0	25D	-F		P	1039	105	1.6	D	Y5
600 RAMY	14	1135	1136	1156	N16	W57	.849	15344	10.2	21	-N	3	C		14		F	Y5
GRP67601	14	1153+2	1200+2 1215	1235	N15	E47	.749	15360	18.0	42	-N				45	.7		
RAMY	14	1153	1200	1244	N14	E46	.735	15360	17.9	51	-B	3	C		50		F	
HCMA	14	1153	1202	1235	N16	E47	.751	15360	18.0	42	-N		C	1202	35	.5	E	
ZURI	14	1155	1215	1231	N15	E47	.749	15360	18.0	36	-F		C	1215	60	.9		
602 RAMY	14	1209	1210	1236	N16	W57	.849	15344	10.2	27	-N	3	C		25			Y5
GRP67603	14	1414+1	1415+0	1428	N16	W35	.611	15352	12.0	14	-N				45	.6	D	
HCMA	14	1414	1415	1430	N17	W35	.616	15352	12.0	16	-N		C	1415	30	.4	D	
ZURI	14	1415	1415	1425	N16	W36	.624	15352	11.9	10	-N		C	1415	60	.8		
GRP67604	14	1615+1	1615+3	1629	N17	E53	.815	15360	18.7	14	-F						D	
RAMY	14	1615	1615	1627	N18	E55	.835	15360	18.8	12	-N	3	C		56			
HCMA	14	1616	1618	1630	N17	E52	.805	15360	18.6	14	-F		C	1618	20	.4	D	
605 HCMA	14	1721		1737D	N17	W37	.640	15352	11.9	16D	-N		C	1725	25	.4	DK	Y5
GRP67606	14	2003	2005	2025	N18	E53	.817	15360	18.8	22	-N				50	.9		
PALE	14	2003	2005	20270	N19	E55	.837	15360	19.0	24D	-N	3	C		60		FDE	
HCMA	14	2008E		2022	N18	E51	.798	15360	18.7	14D	-B		C	2008	40	.7	E	

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OBSERV-ATORY	OBSERVED UT				LOCATION					DURA-TION	IMPOR-TANCE	OBS.		MEASUREMENTS			REMARKS
	DATE	START	MAX. PHASE	END	APPROX LAT.	APPROX MER. DIST.	CENTRAL DISTANCE	McMATH PLAGE REGION	CMR DAY	MIN.		COND.	TYPE	TIME UT	MEAS. AREA Mill. of Disk	CORR AREA Sq. Deg.	
	JUN																
607 HCMA	14	2008E		2018	N17	W38	.652	15352	12.0	10D	-F		C	2008	40	.6	E Y5
	14	2114	2144	NO FLARE PATROL													
	14	2201	2302	NO FLARE PATROL													
	14	2307	2313	NO FLARE PATROL													
	15	0016	0035	NO FLARE PATROL													
	15	0036	0041	NO FLARE PATROL													
	15	0111	0119	NO FLARE PATROL													
608 PALE	15	0141	0143	0154	N15	W42	.692	15352	11.9	13	-B	3	C		42		FDE Y5
609 TEHR	15	0342E	0344	0351	N18	W43	.713	15352	11.9	9D	-B	2	C		127		F Y5
610 CULG	15	0506	0509	0550	N15	W46	.737	15352	11.8	44	-F		C	0509	50	.7	T Y5
611 ABST	15	0531	0536	0546D	N21	E53	.823	15360	19.2	15D	-F		P	0536	87	1.6	D Y5
612 CULG	15	0611	0616U	0635	N11	E58	.852	15361	19.6	24	-F		C	0616	20	.4	Y5
613 ZURI	15	0820	0822	0830	N16	W07	.284	15354	14.8	10	-F		C	0822	70	.8	Y5
614 ABST	15	0951E	0952	1004	N18	E45	.735	15360	18.8	13D	-F		P	0952	131	2.0	E Y5
615 KANZ	15	1058	1154	1237	N16	W09	.300	15354	14.8	99	-F		C				T Y5
616 KANZ	15	1131	1139	1144	N18	E41	.691	15360	18.6	13	-F		C				Y5
617 KANZ	15	1223	1231	1237	N31	E90	1.000	0	22.3	14	-F		C				Y5
618 KANZ	15	1225	1231	1237A	N18	E46	.746	15360	19.0	12D	-F		C				D Y5
619 RAMY	15	1415	1423	1445	N16	W19	.407	15354	14.2	30	-B	3	C		59		Y5
GRP67620	15	1628+0	1628+3	1636	N25	E07	.422	15363	16.2	8	-B						E
RAMY	15	1628	1628	1637	N25	E07	.422	15363	16.2	9	-B	3	C		33		
KANZ	15	1628	1631	1635	N25	E07	.422	15363	16.2	7	-B		C				E
621 HCMA	15	1759E		1930D	N17	W13	.350	15354	14.8	91D	-N		C	1820	50	.6	EK Y5
622 HCMA	15	1906	1907	1915	N16	W52	.803	15352	11.9	9	-F		C	1907	25	.4	D Y5
GRP67623	15	2029+2	2033+1	2055	N25	E06	.418	15363	16.3	26	-N				45	.5	E
HCMA	15	2029	2033	2055	N26	E08	.441	15363	16.5	26	-N		C	2033	35	.4	E
RAMY	15	2031	2034	2041D	N25	E04	.412	15363	16.2	10D	-N	3	C		51		
624 PALE	16	0054	0055	0057	N18	W58	.860	15352	11.7	3	-N	3	C		32		FDE Y5
625 PALE	16	0057	0100	0104	N25	E02	.406	15363	16.2	7	-N	3	C		32		FDE Y5
	16	0118	0132	NO FLARE PATROL													
	16	0133	0137	NO FLARE PATROL													
	16	0150	0155	NO FLARE PATROL													
	16	0315	0320	NO FLARE PATROL													
626 CULG	16	0342	0350	0410	N15	E25	.474	15360	18.0	28	-F		C	0350	60	.7	Y5
627 CULG	16	0415	0423U	0555	S28	W67	.942	15345	11.2	100	1N		C	0423	90		FSG Y5
628 RAMY	16	1125	1126	1131	N16	W61	.882	15352	11.9	6	-B	3	C		45		Y5
GRP67629	16	1143+7	1153+2	1204	N16	W62	.890	15352	11.8	21	-N				35	.8	O
RAMY	16	1143	1153	1202	N16	W62	.890	15352	11.8	19	-B	3	C		40		
CATA	16	1150	1155	1205	N14	W60	.872	15352	12.0	15	-B	2	C	1155	28	.5	
KHAR	16	1153E	1153	1200D	N19	W63	.900	15352	11.8	7D	-F		P				D
	16	1220	1245	NO FLARE PATROL													
	16	1345	1346	NO FLARE PATROL													
	16	1349	1420	NO FLARE PATROL													
GRP67630	16	1401	1405	1435D	N16	E19	.405	15360	18.0	34	-B						
RAMY	16	1401	1405	1435D	N16	E20	.418	15360	18.1	34D	-B	3	C		54		
CATA	16	1420E	1420	1430D	N16	E18	.393	15360	17.9	10D	-N	2	P	1420	140	1.5	
	16	1430	1801	NO FLARE PATROL													
631 RAMY	16	1525	1532	1545	S24	E64	.920	15365	21.4	20	-B	3	C		32		Y5

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	DATE	START	MAX. PHASE	END	APPROX LAT.	APPROX MER. DIST.	CENTRAL DISTANCE	McMATH PLAGE REGION	CMP. DAY	MIN.		COND.	TYPE	TIME UT	MEAS. AREA Mill. of Disk	CORR AREA Sq. Deg.		
	JUN																	
632 RAMY	16	1650	1651	1658	S24	E63	.914	15365	21.4	8	-B	3	C		21			Y5
	16	1804	1820	NO FLARE PATROL														
	16	1824	1835	NO FLARE PATROL														
	16	2023	2029	NO FLARE PATROL														
GRP67633	16	2219	2233	2322	N16	W68	.931	15352	11.8	63	1N						EU	
VORO	16	2219	2233	2255D	N17	W67	.925	15352	11.9	36D	1F		C	2233	108	2.7	E	
CULG	16	2252E	2252E	2323D	N16	W68	.931	15352	11.9	31D	1N		P	2252	110		BU	
MITK	16	2259E		2321	N13	W68	.929	15352	11.9	22D	1N		C	2259	170		E	
634 CULG	16	2318	2321	2327	S20	E90	1.000	15366	23.7	9	-N		C	2321	20			Y5
635 CULG	16	2323	2338U	0023	N16	W68	.931	15352	11.9	60	-N		C	2338	60			Y5
636 CULG	17	0032	0034	0044D	N14	E14	.323	15360	18.1	12D	-F		P	0034	50	.5		Y5
637 CULG	17	0110E	0114U	0115D	N14	E14	.323	15360	18.1	5D	-F		P	0114	90	.9		Y5
638 CULG	17	0159	0205	0219	N15	W69	.936	15352	11.9	20	-N		C	0205	30			Y5
GRP67639	17	0214+1	0222+3	0301	N16	E07	.281	15360	17.6	47	1N				230	2.4	FSU	
CULG	17	0214E	0222	0255D	N16	E08	.288	15360	17.7	41D	1N		P	0222	220	2.3	FSU	
MITK	17	0215	0225	0301	N17	E07	.296	15360	17.6	46	1N		C	0225	240	2.6	F	
640 KHAR	17	1047E	1047	1100D	N16	W35	.609	15354	14.8	13D	-F		P				D	Y5
GRP67641	17	1313	1317+2	1325	N30	E88	.999	15371	24.2	12	-F							
HTPR	17	1313	1317	1325	N30	E90	1.000	15371	24.3	12	-F		C	1317	50			
KANZ	17	1316E	1319	1324	N30	E87	.998	15371	24.1	8D	-F		C					
642 RAMY	17	1548	1549	1553	N19	W21	.457	15369	16.1	5	-N	3	C		26		F	Y5
GRP67643	17	1826E	1827 1836	1858D	N15	W40	.667	15354	14.8	32	-B				130	1.7		
RAMY	17	1826E	1836	1839D	N15	W41	.679	15354	14.7	13D	-B	3	C		132		F	
RAMY	17	1826E	1827	1830D	N15	W41	.679	15354	14.7	4D	-B	3	C		68		F	
MCMA	17	1835E		1858D	N15	W40	.667	15354	14.8	23D	1B		C	1840	130	2.0	E	
GRP67644	17	2150	2152	2308	N15	W44	.714	15354	14.6	78	1B							
PALE	17	2150	2152	2228D	N14	W44	.711	15354	14.6	38D	1B	3	C		181		DE F	
CULG	17	2211E	2211E	2308	N16	W44	.717	15354	14.6	57D	-N		P	2211	110	1.5	B	
645 CULG	17	2219	2234U	2242D	N17	E13	.347	15360	18.9	23D	-N		P	2234	40	.4		Y5
646 CULG	17	2317	2325	2335	N17	W85	.996	15352	11.6	18	-N		C	2325	20			Y5
647 CULG	17	2352	2354	0000	N17	E11	.328	15360	18.8	8	-F		C	2354	20	.2		Y5
GRP67648	18	0010+1	0013 0022+5	0055	N18	E10	.331	15360	18.8	45	-N						IJK	
MITK	18	0010	0027	0106	N18	E10	.331	15360	18.8	56	1N		C	0027	310	3.4	F	
CULG	18	0010	0027	0130	N16	E10	.303	15360	18.8	80	-N		C	0027	140	1.5	KFI	
MANI	18	0011	0013	0032	N19	E10	.345	15360	18.8	21	-N		P		100	1.1	F	
PALE	18	0022	0022	0038	N18	E10	.331	15360	18.8	16	-N	3	C		38		DE	
VORO	18	0033E		0102	N17	E10	.317	15360	18.8	29D	1F		C	0034	242	2.6	EJ	
GRP67649	18	0030+3	0033+4	0100	N15	W44	.713	15354	14.7	30	1N						EJ	
PALE	18	0030	0033	0100	N14	W45	.722	15354	14.6	30	1B	3	C		133		DE	
CULG	18	0031	0037U	0102	N16	W44	.716	15354	14.7	31	-N		C	0037	100	1.5		
MANI	18	0033	0036	0040D	N15	W44	.713	15354	14.7	7D	1N		P		150	2.2		
VORO	18	0033E		0049	N15	W45	.725	15354	14.6	16D	1N		C	0035	215	3.1	EJ	
GRP67650	18	0111+1	0114 0121	0127	N16	W88	.999	15352	11.4	16	-F						DH	
VORO	18	0111	0114	0123	N16	W90	1.000	15352	11.3	12	-F		C	0114	36		DH	
CULG	18	0112	0121	0130	N16	W87	.998	15352	11.5	18	-N		C	0121	30			
651 VORO	18	0117	0118	0124	S16	E79	.984	15366	24.0	7	-N		C	0118	27		D	Y5
652 PALE	18	0123	0123	0132	N14	W46	.734	15354	14.6	9	-N	3	C		45		DE	Y5
653 CULG	18	0130	0134	0143	N17	W24	.474	15369	16.3	13	-F		C	0134	20	.2		Y5
654 VORO	18	0356	0357	0400D	N20	E12	.375	15360	19.1	4D	-N		C	0357	72	.7	D	Y5

Hα SOLAR FLARES

JUNE 1978

OBSERV-ATORY	OBSERVED UT				LOCATION					DURA-TION	IMPOR-TANCE	OBS.		MEASUREMENTS			REMARKS	
	DATE	START	MAX. PHASE	END	APPROX LAT.	APPROX MER. DIST.	CENTRAL DISTANCE	McMATH PLAGE REGION	CMR DAY	MIN.		CONG	TYPE	TIME UT	MEAS. AREA Mill. of Disk	CORR AREA Sq. Deg.		
	JUN																	
GRP67655	18	0718	0742	0809	N26	W30	.615	15363	16.1	51	-N						E	
MITK	18	0718	0742	0806	N26	W30	.615	15363	16.1	48	-N		C	0742			E	
BUCA	18	0720E		0800D	N25	W30	.607	15363	16.1	400	-N		C	0740	107	1.4	E	
KANZ	18	0736E	0736	0739D	N26	W32	.635	15363	15.9	3D	-F		C					
CATA	18	0750E	0750	0800D	N28	W27	.603	15363	16.3	10D	-B	1	P	0750	112	1.4		
ABST	18	0757E	0757	0811D	N24	W31	.610	15363	16.0	140	-F		P	0757	70	.9	D	
GRP67656	18	0842	0848+1	0904	N19	E09	.338	15360	19.0	22	-N							
KANZ	18	0842	0849	0904	N20	E09	.352	15360	19.0	22	-B		C					
ABST	18	0848E	0848	0851D	N18	E10	.331	15360	19.1	3D	-F		P	0848	105	1.2	D	
ABST	18	0848E	0848	0851D	N18	E07	.309	15360	18.9	3D	-F		P	0848	70	1.2	D	
657 MCMA	18	1208	1210	1212D	N20	E06	.335	15360	19.0	4D	-B		C	1210	30	.3	D	Y5
GRP67658	18	1636+1	1638+2	1657	N16	W53	.811	15354	14.7	21	-N						E	
KANZ	18	1636	1638	1652	N16	W53	.811	15354	14.7	16	-N		C					
RAMY	18	1637	1638	1656	N15	W53	.809	15354	14.7	19	-B	2	C		49		F	
MEUD	18	1639E	1640	1658	N17	W56	.841	15354	14.5	19D	-F		C				E	
MCMA	18	1650E		1700D	N17	W52	.803	15354	14.8	10D	-F		C	1650	50	.9	E	
659 CULG	18	2205	2215	2229D	S32	E36	.739	15365	21.6	24D	-F		P	2215	50	.8		Y5
	18	2214	2215	NO FLARE PATROL														
	18	2358	0010	NO FLARE PATROL														
660 CULG	19	0049	0102	0111	S23	E90	1.000	15374	25.8	22	-F		C	0102	30			Y5
661 CULG	19	0158	0202	0209	S21	E90	1.000	15374	25.8	11	-F		C	0202	10			Y5
GRP67662	19	0354+6	0357+2 0407	0418	N18	W04	.292	15360	18.9	24	-N				120	1.3	E	
MITK	19	0354	0359	0422	N18	W05	.296	15360	18.8	28	-N		C	0359			E	
TACH	19	0355	0357	0422	N18	W04	.292	15360	18.9	27	-N		C	0357	133	1.4	E	
PALE	19	0355	0357	0404	N19	W06	.317	15360	18.7	9	-B	3	C		123		DE	
TEHR	19	0400	0407	0414	N19	W03	.305	15360	18.9	14	-N	2	C		127			
663 CULG	19	0529	0531	0535	S35	W53	.878	15356	15.3	6	-F		C	0531	20	.5		Y5
664 KANZ	19	1327	1330	1348	N25	W46	.768	15363	16.1	21	-N		C					Y5
GRP67665	19	1550E	1551+0	1603	N17	W21	.436	15360	18.1	13	-F						E	
MEUD	19	1550E	1551	1600	N17	W21	.436	15360	18.1	10D	-F		C				CE	
MCMA	19	1550E	1551	1605D	N17	W21	.436	15360	18.1	15D	-N		C	1551	50	.6	E	
GRP67666	19	1816+0	1816	1826	N25	W48	.787	15363	16.2	10	-F				35	.6		
PALE	19	1816	1816	1821	N25	W46	.768	15363	16.3	5	-N	3	C		17		F	
MCMA	19	1816E		1830	N25	W50	.805	15363	16.0	14D	-F		P	1819	50	.9	E	
GRP67667	19	2336+1	2338+1	0000	N25	W51	.814	15363	16.2	24	-B				110	1.9		
MITK	19	2336	2339	2356	N26	W53	.834	15363	16.0	20	-B		C	2339			E	
CULG	19	2337	2339	0004	N24	W51	.811	15363	16.2	27	-N		C	2339	70	1.3		
PALE	19	2337	2338	2343D	N25	W49	.796	15363	16.3	6D	1B	3	V		150		FDE	
668 CULG	19	2341	2357	0006	S19	E90	1.000	15375	26.7	25	-F		C	2357	10			Y5
669 CULG	19	2355	2401	0020	N18	E72	.953	15368	25.4	25	-F		C	2401	20			Y5
670 PALE	20	0045	0045	0052	N17	E69	.936	15368	25.2	7	-N	3	C		24		FDE	Y5
671 CULG	20	0124	0135	0150	S18	E46	.758	15366	23.5	26	-F		C	0135	20	.3		Y5
672 CULG	20	0159	0216U	0245	N15	W22	.431	15360	18.4	46	-N		C	0245	30	.3		Y5
673 CULG	20	0336	0338	0355	N18	W22	.456	15360	18.5	19	-N		C	0338	40	.5		Y5
674 MEUD	20	0643	0644	0647	N12	W04	.193	15370	20.0	4	-F		C				D	Y5
GRP67675	20	0807+1	0812+0	0814	N17	E66	.918	15368	25.3	7	-F				70		D	
HTPR	20	0807	0812	0814	N17	E66	.918	15368	25.3	7	-N		C	0812	70	1.6		
MONT	20	0808	0812	0814	N17	E67	.924	15368	25.4	6	-F		C	0812	70		D	
676 HTPR	20	0813	0817	0819	S19	E90	1.000	15375	27.1	6	-F		C	0817	20			Y5
677 HTPR	20	0839	0843	0845	N16	E66	.917	15368	25.3	6	-F		C	0843	10	.2		Y5

Hα SOLAR FLARES

JUNE 1978

OBSERV-ATORY	OBSERVED UT				LOCATION					DURA-TION	IMPOR-TANCE	OBS.		MEASUREMENTS			REMARKS
	DATE	START	MAX. PHASE	END	APPROX LAT.	APPROX MER. DIST.	CENTRAL DISTANCE	McMATH PLAGE REGION	CMR DAY	MIN.		COND.	TYPE	TIME UT	MEAS. AREA Mill. of Disk	CORR AREA Sq. Deg.	
	JUN																
GRP67678	20	0857+1	0859+3	0917	N20	E76	.972	15368	26.1	20	1N				100		
HTPR	20	0857	0859	0915	N20	E77	.975	15368	26.1	18	1N		C	0859	100		
ZURI	20	0858	0902	0918	N20	E75	.968	15368	26.0	20	1N		P	0902	100		
GRP67679	20	0908+4	0912	0934	S20	E90	1.000	15375	27.1	26	1F				70		E
			0924+0														
HTPR	20	0908	0912	0917	S19	E90	1.000	15375	27.1	9	-F		C	0912	10		
ZURI	20	0910E	0924	0932	S20	E90	1.000	15375	27.1	22D	1N		P	0924	100		
MONT	20	0912	0924	0935	S20	E90	1.000	15375	27.1	23	-F		C	0924	50		E
CATA	20	0920E	0930	0930D	S22	E90	1.000	15375	27.1	10D	1F	2	P	0930	67		
HTPR	20	0922	0924	0934	S19	E90	1.000	15375	27.1	12	-N		C	0924	50		
GRP67680	20	1015+0	1020+0	1043	N12	W05	.200	15370	20.1	28	-N				45	.5	E
HTPR	20	1015	1020	1035	N12	W05	.200	15370	20.1	20	-F		C	1020	30	.3	E
CATA	20	1015	1020	1050	N12	W05	.200	15370	20.1	35	-B	2	C	1020	56	.6	
GRP67681	20	1143+9	1152+1	1159	S19	E87	.999	15375	27.0	16	-N						E
MCMA	20	1143	1152	1201	S20	E88	1.000	15375	27.1	18	-N		C	1152			E
HTPR	20	1152	1153	1156	S19	E87	.999	15375	27.0	4	-N		C	1153	30		
682 ZURI	20	1212	1220	1228	S29	E16	.562	15365	21.7	16	-F		C	1220	70	.9		Y5
GRP67683	20	1250+2	1258+0	1303	N17	E63	.897	15368	25.3	13	-N				45	1.0	EH
ZURI	20	1250	1258	1302	N18	E64	.905	15368	25.3	12	-N		C	1258	60	1.5	
MCMA	20	1252	1258	1303	N16	E63	.896	15368	25.3	11	-N		C	1258	30	.7	EH
684 RAMY	20	1325	1327	1347	N26	E70	.948	15373	25.8	22	-N	4	C		13			Y5
685 MCMA	20	1330	1336	1400D	N16	E65	.910	15368	25.4	30D	-N		C	1336	50	1.2	E	Y5
GRP67686	20	1355+1	1356+2	1405	S29	E15	.556	15365	21.7	10	-F				40	.5	E	
HTPR	20	1355	1356	1405	S29	E15	.556	15365	21.7	10	-F		C	1356	40	.4	E	
MCMA	20	1355	1357	1420	S30	E15	.569	15365	21.7	25	-N		C	1357	35	.4	E	
RAMY	20	1356	1358	1404	S30	E15	.569	15365	21.7	8	-N	4	C		30		F	
ZURI	20	1356	1356	1404	S29	E15	.556	15365	21.7	8	-F		C	1356	60	.8		
687 MCMA	20	1431	1435	1437	S20	E87	.999	15375	27.1	6	-N		C	1435			D	Y5
688 HTPR	20	1632	1634	1641	S19	E85	.997	15375	27.1	9	-F		C	1634	20			Y5
GRP67689	20	1701+2	1709	1730	N25	E71	.952	15373	26.0	29	-F				15		D	
MCMA	20	1701	1709	1730	N25	E69	.942	15373	25.9	29	-N		C	1709	20	.6	D	
HTPR	20	1703		1711D	N25	E74	.965	15373	26.3	8D	-F		C	1708	10			
GRP67690	20	1721+1	1726+2	1750	N20	E50	.790	15368	24.5	29	-B							
RAMY	20	1721	1726	1744	N18	E42	.699	15368	23.9	23	-B	3	C		92			
MCMA	20	1722		1808D	N20	E51	.800	15368	24.5	46D	1B		C	1734	125	2.2	E	
KANZ	20	1725E	1728	1750	N22	E50	.795	15368	24.5	25D	-B		C				F	
GRP67691	20	1734+0	1735+0	1742	S17	E47	.765	15366	24.3	8	-F				25	.4	E	
MCMA	20	1734	1735	1743D	S18	E48	.779	15366	24.3	9D	-F		C	1735	30	.5	E	
RAMY	20	1734	1735	1741	S17	E47	.765	15366	24.3	7	-N	3	C		19			
GRP67692	20	1754+1	1758+0	1811	S19	E80	.988	15375	26.7	17	-F							
KANZ	20	1754	1758	1811	S19	E81	.990	15375	26.8	17	-F		C					
RAMY	20	1755	1758	1810	S19	E79	.985	15375	26.7	15	-F	3	C		11			
693 MCMA	20	1908	1910	1917	S18	E47	.769	15366	24.3	9	-N		C	1910	15	.2	D	Y5
GRP67694	20	1918+1	1928+0	1950	S19	E79	.985	15375	26.7	32	1N				90		EU	
RAMY	20	1918	1928	1954	S19	E79	.985	15375	26.7	36	1B	2	C		99			
PALE	20	1919	1928	1931D	S18	E78	.982	15375	26.7	12D	1N	3	V		88		DE	
MCMA	20	1919	1928	1945	S19	E83	.994	15375	27.0	26	1N		C	1928			EU	
695 RAMY	20	2012	2015	2034	S19	E78	.982	15375	26.7	22	-F	2	C		23			Y5
696 MCMA	20	2150	2153	2201D	S18	E46	.758	15366	24.4	11D	-F		C	2153	15	.2	D	Y5
GRP67697	20	2208+2	2211+1	2220	S18	E80	.988	15375	26.9	12	-N				20			
CULG	20	2208	2212	2225	S20	E80	.988	15375	26.9	17	-F		C	2212	30			
MCMA	20	2209	2212	2220D	S18	E82	.992	15375	27.1	11D	-N		C	2212			D	
PALE	20	2210	2211	2218	S18	E76	.975	15375	26.6	8	-N	3	C		13		F	
698 PALE	20	2255	2255	2309	N18	W40	.676	15360	18.0	14	-N	3	C		23		F	Y5
699 CULG	20	2332	2340	0003	N16	E57	.847	15368	25.3	31	-N		C	2340	10	.2		Y5

Hα SOLAR FLARES

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OBSERVATORY	OBSERVED UT				LOCATION					DURATION	IMPORTANCE	OBS.		MEASUREMENTS			REMARKS
	DATE JUN	START	MAX. PHASE	END	APPROX LAT.	APPROX LONG. DIST.	CENTRAL DISTANCE	McMATH PLAGE REGION	CMR DAY	MIN.		CONG.	TYPE	TIME UT	MEAS. AREA Millionths of Disk	CORR. AREA Sq. Deg.	
700 PALE	20	2337	2338	0008	N25	W49	.795	15358	17.3	31	?B	3	C		175		U F Y5
	IMP.1 NO		VORO1	CULG1	MITK1												
701 VORO	21	0007	0014	0028	S18	E82	.992	15375	27.2	21	?F		C	0014	54		EJ Y5
	IMP.1 NO		CULG1	PALE1													
GRP67702	21	0030	0034	0048	S17	E42	.713	15366	24.2	18	-F						D
CULG	21	0030	0034U	0058	S18	E40	.695	15366	24.0	28	-F		C	0034	40	.6	
MITK	21	0034E		0038	S17	E44	.734	15366	24.3	4D	-F		C	0034			D
GRP67703	21	0109+2	0114+1	0123	N14	W90	1.000	15354	14.3	14	-N				50		EH
CULG	21	0109	0115	0125	N14	W90	1.000	15354	14.3	16	-N		C	0115	40		
VORO	21	0111	0114	0121	N14	W90	1.000	15354	14.3	10	1F		C	0114	63		EH
GRP67704	21	0129+8	0131+0	0139	S17	E42	.713	15366	24.2	10	-N				50	.7	EJ
CULG	21	0129	0131	0144	S18	E40	.695	15366	24.1	15	-N		C	0131	40	.6	
VORO	21	0129	0131	0133	S17	E45	.745	15366	24.4	4	-N		C	0131	72	1.0	EJ
705 CULG	21	0130	0134	0146	S19	W45	.753	15359	17.7	16	-N		C	0134	20	.3	Y5
706 CULG	21	0210	0213	0219	N14	W90	1.000	15354	14.3	9	-F		C	0213	10		Y5
707 CULG	21	0350	0353	0358	S18	E39	.684	15366	24.1	8	-F		C	0353	10	.1	Y5
708 CULG	21	0505	0505	0510	S18	E39	.684	15366	24.1	5	-F		C	0505	30	.4	Y5
GRP67709	21	0512	0514+2	0535	S18	E75	.972	15375	26.8	23	-N				45		
CULG	21	0512	0514U	0543	S18	E80	.988	15375	27.2	31	-F		C	0514	30		
TEHR	21	0514E	0516	0526	S18	E71	.954	15375	26.5	120	-B	2	C		64		
710 CULG	21	0530	0533	0544	S18	E39	.684	15366	24.2	14	-N		C	0533	30	.4	Y5
711 HTPR	21	0804	0808	0815	N16	E56	.838	15368	25.5	11	-F		C	0808	30	.5	Y5
712 HTPR	21	0925	0927	0931	N18	E52	.804	15368	25.3	6	-F		C	0927	30	.5	Y5
GRP67713	21	1001+4	1005+0	1015	S16	E71	.952	15375	26.7	14	-F						
HTPR	21	1001	1005	1015	S17	E73	.963	15375	26.9	14	-F		C	1005	20		
KANZ	21	1005	1005	1014	S16	E70	.947	15375	26.7	9	-F		C				
714 RAMY	21	1200	1209	1332	S19	E66	.927	15375	26.5	92	-B	3	C		47		Y5
715 RAMY	21	1242	1242	1301	N16	E51	.790	15368	25.4	19	-N	3	C		20		Y5
716 HTPR	21	1306	1309	1319	S18	E37	.661	15366	24.3	13	-N		C	1309	60	.7	EG Y5
GRP67717	21	1420	1442	1453	N11	W21	.388	15370	20.0	33	-N				110	1.2	EK
RAMY	21	1420	1442	1452	N11	W20	.373	15370	20.1	32	-B	3	C		150		
MCMA	21	1442E		1453D	N12	W22	.409	15370	20.0	11D	-N		C	1442	75	.8	EK
GRP67718	21	1531+3	1538+3	1549	S21	E70	.951	15375	26.9	18	1B				150		E
RAMY	21	1400	1541	1543D	S19	E66	.927	15375	26.5	103D	1B	*	V		200		
ZURI	21	1531	1539	1547D	S21	E73	.965	15375	27.1	16D	1B	*	P	1539	100		
MCMA	21	1534E	1538	1550D	S22	E73	.966	15375	27.1	16D	1B	*	C	1538	100	4.0	E
HTPR	21	1534	1539	1546	S22	E72	.961	15375	27.0	12	-N	*	C	1539	130		
RAMY	21	1541E	1541	1612	S19	E66	.927	15375	26.6	31D	1B	*	C		200		
719 MCMA	21	1618	1622	1635	N20	E35	.626	15368	24.3	17	-F		C	1622	40	.6	E Y5
720 MCMA	21	1715	1724	1731D	S16	E69	.942	15375	26.9	16D	-N		C	1724	25	.8	E Y5
GRP67721	21	2146E	2151	2222	N11	W24	.432	15370	20.1	36	-N						
CULG	21	2146E	2151	2210	N12	W25	.451	15370	20.0	24D	-N		C	2151	50	.6	
PALE	21	2155E	2155U	2234D	N11	W24	.432	15370	20.1	39D	-B	3	C		162		FDE
722 VORO	21	2349	2351	2356	S20	E68	.940	15375	27.1	7	-B		C	2351	81		D Y5
723 VORO	22	0007	0010	0019	S19	E12	.406	15366	22.9	12	-N		C	0010	134	1.4	EJ Y5
GRP67724	22	0103+2	0106+2	0113	N12	W24	.436	15370	20.2	10	-N						D
CULG	22	0103	0106	0107D	N12	W25	.451	15370	20.2	4D	-N		P	0106	20	.2	
VORO	22	0105	0108	0113	N13	W24	.442	15370	20.2	8	-N		C	0108	108	1.2	D
GRP67725	22	0117	0120	0130	N11	W27	.475	15370	20.0	13	-N						EJ
VORO	22	0117	0120	0130	N12	W28	.493	15370	20.0	13	-N		C	0120	152	1.7	EJ
CULG	22	0119E		0119D	N11	W26	.460	15370	20.1		-N		P	0119	50	.6	

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OBSERV-ATORY	OBSERVED UT				LOCATION					DURA-TION	IMPOR-TANCE	OBS.		MEASUREMENTS			REMARKS
	DATE	START	MAX. PHASE	END	APPROX LAT.	APPROX MER. DIST.	CENTRAL DISTANCE	McMATH PLAGE REGION	CMR DAY	MIN.		CONG	TYPE	TIME UT	MEAS. AREA Mill. of Disk	CORR AREA Sq. Deg.	
	JUN																
GRP67726	22	0235	0245+2	0301	S20	E66	.929	15375	27.1	26	1N				120		K
VORO	22	0235	0247	0303	S20	E67	.934	15375	27.1	28	1N		C	0247	152		EK
HANI	22	0236E	0236U	0240D	S20	E67	.934	15375	27.1	4D	-F		V		40	.9	F
PALE	22	0237E	0237U	0250D	S19	E63	.908	15375	26.8	13D	-B	3	C		120		FDE
HANI	22	0243E	0245	0258	S20	E66	.929	15375	27.1	15D	-N		V		90	1.9	F
727 TACH	22	0347E		0419D	S24	W03	.438	15365	21.9	32D	-N		V	0415	88	1.0	Y5
728 HTPR	22	0519E	0532	0552	S26	W08	.483	15365	21.6	33D	-F		C	0532	70		E Y5
GRP67729	22	0600+1	0604 0610+0	0632	S26	W06	.476	15365	21.8	32	1B				230	2.6	EJ
CATA	22	0600	0610	0610D	S27	W05	.488	15365	21.9	10D	1B	2	P	0610	281	3.3	
HTPR	22	0601	0604	0650	S26	W08	.483	15365	21.7	49	1N		C	0604	260	2.9	E
TEHR	22	0605E	0610	0629	S28	W05	.503	15365	21.9	24D	-B	1	C		190		FDE
ABST	22	0626E	0628	0632D	S25	W09	.473	15365	21.6	6D	-F		P	0628	105	1.2	EJ
ABST	22	0626E	0628	0632D	S26	W04	.471	15365	22.0	6D	-F		P	0628	87	1.0	E
730 HTPR	22	0843	0849	0900	N09	W27	.466	15370	20.3	17	-F		C	0849	40	.4	Y5
GRP67731	22	1025+2	1028+2	1033	S22	E60	.892	15375	26.9	8	-F						E
ABST	22	1025	1028	1036	S22	E62	.906	15375	27.1	11	1F		C	1028	201		E
HTPR	22	1027	1030	1030	S23	E59	.887	15375	26.9	3	-F		C	1030	40	.8	E
732 HTPR	22	1356		1404D	N32	E20	.582	15371	24.1	8D	-F		C	1401	20	.2	E Y5
	22	1404	1406	NO FLARE PATROL													
733 KANZ	22	1434		1442	N13	W33	.567	15370	20.1	8	-F		C				Y5
734 KANZ	22	1436	1442	1446	S17	E55	.842	15375	26.7	10	-B		C				Y5
	22	1545	1552	NO FLARE PATROL													
GRP67735	22	1600+1	1600 1610	1616	N12	W33	.563	15370	20.2	16	-B						
RAMY	22	1600	1600	1612	N11	W35	.587	15370	20.0	12	-B	3	C		19		
KANZ	22	1601	1610	1620	N12	W33	.563	15370	20.2	19	-B		C				
HTPR	22	1601		1609D	N12	W30	.521	15370	20.4	8D	-F		C	1608	20	.2	
GRP67736	22	1643+2	1654 1745	2240D	N18	E16	.383	15368	23.9	357	2B						FLU
KANZ	22	1643	1721	1804D	N19	E21	.451	15368	24.3	81D	2B		C				FU
RAMY	22	1645	1745	2002D	N17	E16	.372	15368	23.9	197D	2N	3	C		992		FDE
RAMY	22	1645	1654	2002D	N17	E16	.372	15368	23.9	197D	1B	3	C		320		FDE
PALE	22	1734E	1805U	2240	N19	E17	.406	15368	24.0	306D	2B	3	C		550		U F
MCMA	22	2103E		2341D	N17	E16	.372	15368	24.1	158D	1F		C	2104	200	2.1	BFL
	22	1804	2100	NO FLARE PATROL													
GRP67737	22	1940+9	1953+2	2101	S19	E53	.830	15375	26.8	81	1B				230	4.1	FZ
PALE	22	1940	1955	2101	S20	E54	.841	15375	26.9	81	1B	3	C		265		Z F
RAMY	22	1949	1953	1956D	S19	E53	.830	15375	26.8	7D	1B	3	C		188		
GRP67738	22	2117+1	2127+3 2149	2157	N26	E39	.702	15373	25.8	40	-B				100	1.4	EJL
MCMA	22	2117	2130	2201D	N24	E37	.670	15373	25.7	44D	-B	*	C	2130	75	1.1	EL
VORO	22	2118	2127	2157	N25	E36	.666	15373	25.6	39	-N	*	C	2127	134	1.8	EJL
PALE	22	2118	2130	2155	N27	E44	.756	15373	26.2	37	-B	3	C		84		FDE
VORO	22	2148	2149	2154	N28	E42	.742	15373	26.1	6	-N		C	2149	27	.4	D
739 VORO	22	2144	2147	2152	N19	E64	.905	15376	27.7	8	-N		C	2147	54	1.2	D Y5
GRP67740	22	2243+5	2250+1	2300	N19	E62	.891	15376	27.6	17	-N				30	.7	DJ
CULG	22	2243	2250	2301	N19	E62	.891	15376	27.6	18	-F		C	2250	20	.5	
MCMA	22	2246	2251	2300	N18	E63	.897	15376	27.7	14	-B		C	2251	25	.6	D
VORO	22	2246	2250	2300	N19	E64	.905	15376	27.7	14	-F		C	2250	63	1.4	DJ
PALE	22	2248	2251	2259	N21	E58	.863	15376	27.3	11	-N	3	C		31		FDE
GRP67741	23	0116+2	0119+1	0125	N20	E61	.884	15376	27.6	9	-N				40	.9	
PALE	23	0104	0120	0125	N21	E57	.854	15376	27.3	21	-N	3	C		34		FDE
CULG	23	0116	0119	0128	N18	E61	.882	15376	27.6	12	-N		C	0119	30	.7	
VORO	23	0118	0119	0124	N20	E63	.899	15376	27.8	6	-N		C	0119	63	1.4	D
GRP67742	23	0215+1	0216+1	0226	N28	E39	.712	15373	26.0	11	-F				40	.6	D
CULG	23	0215	0216	0230	N28	E39	.712	15373	26.0	15	-F		C	0216	30	.4	
VORO	23	0216	0217	0221	N29	E40	.728	15373	26.1	5	-F		C	0217	45	.6	D

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OBSERV-ATORY	OBSERVED UT				LOCATION					DURA-TION	IMPOR-TANCE	OBS		MEASUREMENTS			REMARKS	
	DATE	START	MAX. PHASE	END	APPROX LAT.	APPROX MER. DIST.	CENTRAL DISTANCE	McMATH PLAGE REGION	CMR DAY	MIN.		COND	TYPE	TIME UT	MEAS. AREA Mill. of Disk	CORR AREA Sq. Deg		
	JUN																	
743 VORO	23	0234	0237	0239	N28	E40	.722	15373	26.1	5	-N		C	0237	72	1.0	D	Y5
	23	0300	0305	NO FLARE PATROL														
	23	0339	0346	NO FLARE PATROL														
744 CULG	23	0345E	0350U	0412	N23	E33	.620	15373	25.6	27D	-F		C	0350	40	.5		Y5
745 CULG	23	0512	0509	0519	N23	E33	.620	15373	25.7	7	-F		C	0509	40	.5		Y5
746 CULG	23	0551	0556	0602	S16	E43	.721	15375	26.5	11	-N		C	0556	20	.3		Y5
747 CULG	23	0605	0610	0618D	N21	W64	.907	15360	18.5	13D	-F		P	0610	40	1.0		Y5
748 CULG	23	0615	0615U	0618D	N23	E33	.620	15373	25.7	3D	-F		P	0615	10	.1		Y5
GRP67749	23	0735>9	0744+5 0800+1	0816	N25	E30	.602	15373	25.6	41	1N						EI	
MONT	23	0735	0744	0829	N26	E29	.599	15373	25.5	54	1N		C	0744	500			
KIEV	23	0741	0749	0806D	N23	E30	.586	15373	25.6	25D	2N		C	0749	700	8.8	EI	
BUCA	23	0744E	0749	0830D	N25	E30	.602	15373	25.6	46D	1B		C	0749	322	4.1	CE	
ISTA	23	0745		0800	N26	E31	.620	15373	25.6	15	-N						E	
TEHR	23	0749E	0801	0808	N24	E38	.680	15373	26.2	19D	1B	2	C		222		FDE	
ATHN	23	0750E	0800	0812	N25	E28	.581	15373	25.4	22D	-N	1		0800	196	2.2		
KHAR	23	0813E	0813	0827D	N27	E30	.618	15373	25.6	14D	-F		P	0813	110	1.4	E	
750 KHAR	23	0813E	0813	0827D	N27	E18	.506	15368	24.7	14D	-F	*	P				D	Y5
751 KHAR	23	0823E		0823D	S23	E50	.816	15375	27.1		-F		P				D	Y5
752 KHAR	23	0836E		0836D	N24	E57	.860	15376	27.6		-F		P	0836	100	1.8	D	Y5
753 KHAR	23	0836E		0920D	N27	E18	.506	15368	24.7	44D	-F	*	P	0839			DL	Y5
754 KHAR	23	0934E		0941D	N27	E62	.901	15376	28.0	7D	?N		P	0934	110	2.4	D	Y5
	IMP.1	NO	MONT2	KIEV1	CATA1													
755 KHAR	23	1002E		1014D	N18	E29	.540	15368	25.6	12D	-F		P	1002			D	Y5
756 CATA	23	1020	1020	1035	N18	E27	.515	15368	25.5	15	-N	2	C	1020	112	1.3		Y5
GRP67757	23	1043+2	1050+0	1059	N12	W46	.727	15370	20.0	16	-N				60	.9	E	
MCMA	23	1043	1050	1102	N13	W46	.729	15370	20.0	19	-N		C	1050	70	1.0	E	
CATA	23	1045	1050	1055	N12	W47	.739	15370	19.9	10	-B	2	C	1050	56	.8		
758 MCMA	23	1132	1135	1154	S28	W24	.613	15365	21.7	22	-N		C	1135	30	.4	E	Y5
759 MCMA	23	1143	1146	1154	N24	E29	.583	15373	25.7	11	-N		C	1146	30	.4	E	Y5
GRP67760	23	1206+4	1207 1214	1218	N23	E56	.849	15376	27.7	12	-N						EK	
RAMY	23	1206	1207	1215	N23	E56	.849	15376	27.7	9	-N	3	C		21			
MCMA	23	1210	1214	1220	N23	E57	.858	15376	27.8	10	-N		C	1214	40	.8	EK	
761 RAMY	23	1234	1234	1239	N23	E56	.849	15376	27.7	5	-N	3	C		16			Y5
GRP67762	23	1318>9	1323+5	1344	N23	E54	.833	15376	27.6	26	-N						E	
MCMA	23	1318	1323	1348	N23	E53	.824	15376	27.5	30	-B		C	1323	60	1.1	E	
RAMY	23	1328	1328	1340	N23	E55	.841	15376	27.7	12	-N	3	C		18			
GRP67763	23	1328+3	1337+3	1401	N24	E29	.583	15373	25.7	33	-N				70	.9	E	
MCMA	23	1328	1340	1404D	N23	E27	.553	15373	25.6	36D	-B		C	1340	90	1.1	E	
RAMY	23	1331	1337	1401	N25	E31	.612	15373	25.9	30	-B	3	C		56			
MEUD	23	1336E	1338	1350	N25	E33	.633	15373	26.0	14D	-F		C				E	
HTPR	23	1346E		1401	N24	E27	.562	15373	25.6	15D	-F		C	1348	50	.5	E	
GRP67764	23	1416+1	1418+2	1428	S28	W26	.629	15365	21.6	12	-N				90	1.1	E	
HTPR	23	1416		1422D	S28	W26	.629	15365	21.6	6D	-N		C	1419	120	1.4	E	
MEUD	23	1416E	1420	1430	S30	W28	.664	15365	21.5	14D	-N		C				E	
RAMY	23	1417	1418	1426	S27	W24	.602	15365	21.8	9	-B	3	C		62			
	23	1422	1426	NO FLARE PATROL														
	23	1432	1501	NO FLARE PATROL														
765 RAMY	23	1619	1620	1625	N25	E28	.581	15373	25.8	6	-N	3	C		22			Y5
766 RAMY	23	1624	1627	1636	N27	E57	.866	15376	28.0	12	-N	3	C		18			Y5

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OBSERVATORY	OBSERVED UT				LOCATION					DURATION MIN.	IMPORTANCE	OBS.		MEASUREMENTS			REMARKS
	DATE JUN	START	MAX. PHASE	END	APPROX LAT.	APPROX MER. DIST.	CENTRAL DISTANCE	McMATH PLAGE REGION	CMP. DAY			CONF.	TYPE	TIME UT	MEAS. AREA Mill. of Disk	CORR. AREA Sq. Deg.	
	23	1627	1636	NO FLARE PATROL													
	23	1637	1639	NO FLARE PATROL													
GRP67767	23	1731+2	1735+1	1753	N25	E27	.570	15373	25.8	22	-B				120	1.5	
RAMY	23	1731	1735	1748	N25	E27	.570	15373	25.8	17	-B	3	C		111		F
MCMA	23	1732	1736	1757	N25	E26	.560	15373	25.7	25	-B		C	1736	130	1.7	E
PALE	23	1733	1735	1740D	N27	E27	.588	15373	25.8	7D	-B	3	C		120		FDE
	23	1851	2145	NO FLARE PATROL													
768 VORO	23	2146	2147	2150	N21	E16	.417	15368	25.1	4	-F		C	2147	72	.8	D Y5
769 PALE	23	2215	2216	2218	S21	E39	.701	15375	26.9	3	-N	3	C		23		F Y5
GRP67770	23	2300+5	2309+1	2336	S21	E37	.680	15375	26.7	36	-F				40	.5	F
CULG	23	2300	2310U	2350	S23	E37	.692	15375	26.7	50	-F		C	2310	30	.4	F
PALE	23	2305	2309	2322	S20	E38	.685	15375	26.8	17	-N	3	C		51		F
771 CULG	23	2317	2322	2326D	N20	W75	.967	15360	18.3	9D	-F		C	2322	10		Y5
GRP67772	24	0007+1	0009+1	0024	S20	E40	.707	15375	27.0	17	-F				50	.7	
CULG	24	0007	0010	0027	S21	E40	.712	15375	27.0	20	-F		C	0010	20	.3	
VORO	24	0008	0010	0013D	S20	E42	.728	15375	27.2	5D	-F		C	0010	45	.6	E
PALE	24	0008	0009	0021	S20	E38	.686	15375	26.9	13	-N	3	C		56		F
773 CULG	24	0148	0156	0212	N18	E19	.415	15368	25.5	24	-F		C	0156	20	.2	Y5
774 CULG	24	0252	0253	0257	N12	W90	1.000	0	17.4	5	-F		C	0253	20		Y5
775 CULG	24	0340	0341	0354	N19	W79	.981	15360	18.2	14	-N		C	0341	10		Y5
776 CULG	24	0350	0356	0413	N16	W59	.863	15370	19.7	23	-F		C	0356	30	.6	Y5
	24	0408	0410	NO FLARE PATROL													
777 CULG	24	0447	0451	0505	N19	W02	.293	15368	24.0	18	-F		C	0451	30	.3	Y5
778 CULG	24	0513	0514	0531	N23	E43	.727	15376	27.4	18	-F		C	0515	30	.4	Y5
779 KHAR	24	0840E		0840D	N25	E50	.802	15376	28.1		-F		P				D Y5
780 KHAR	24	0850E		0850D	N24	E45	.751	15376	27.7		-F		P				D Y5
GRP67781	24	0943+7		1002D	N26	E47	.778	15376	27.9	19	-F						
KHAR	24	0943E		1002D	N27	E47	.782	15376	27.9	19D	1F		P	0950			D
HTPR	24	0950		0953D	N25	E48	.784	15376	28.0	3D	-F		C	0952	20	.3	E
782 KHAR	24	0950E		1002D	S19	E39	.691	15375	27.3	12D	-F		P				D Y5
783 HTPR	24	1015	1019	1028	N20	W05	.319	15368	24.1	13	-F		C	1019	20	.2	Y5
GRP67784	24	1036+2	1039+3	1103	N26	E47	.778	15376	28.0	27	-N				20	.3	D
MCMA	24	1036	1039	1105	N25	E49	.793	15376	28.1	29	-B		C	1039	20	.3	D
KHAR	24	1038E		1105D	N27	E47	.782	15376	28.0	27D	1F		P	1039			D
HTPR	24	1038	1042	1100	N25	E47	.774	15376	28.0	22	-F		C	1042	20	.3	
CATA	24	1040E	1040	1055	N28	E47	.786	15376	28.0	15D	-B	2	P	1040	28	.4	
GRP67785	24	1205+3	1208+0	1211	S23	E34	.663	15375	27.1	6	-B				30	.4	DH
RAMY	24	1205	1208	1223	S20	E30	.599	15375	26.8	18	-B	4	C		43		H
MCMA	24	1207	1208	1211	S24	E34	.670	15375	27.1	4	-B		C	1208	20	.3	D
HTPR	24	1208	1208	1209	S23	E35	.673	15375	27.1	1	-N		C	1208	30	.4	
786 RAMY	24	1249	1259	1314	N17	W08	.290	15368	23.9	25	-B	4	C		60		Y5
GRP67787	24	1320+1	1324+8	1401	S21	E33	.639	15375	27.0	41	-N				80	1.0	
RAMY	24	1253	1324	1404	S20	E29	.588	15375	26.7	71	-B	4	C		88		FDE
HTPR	24	1320	1329	1350	S22	E33	.646	15375	27.0	30	-N		C	1329	70	.8	E
TEHR	24	1321E	1325	1357	S21	E34	.649	15375	27.1	36D	-B	2	C		95		F
MCMA	24	1321	1332	1410D	S23	E33	.653	15375	27.0	49D	-N		C	1332	70	.9	E
GRP67788	24	1413	1414+2 1437	1522	N18	W87	.998	15360	18.1	69	-N						
RAMY	24	1413	1414	1522	N16	W87	.998	15360	18.1	69	-B	4	C				
RAMY	24	1413	1437	1522	N16	W87	.998	15360	18.1	69	-N	4	C				
TEHR	24	1414E	1416	1417D	N20	W88	.999	15360	18.0	3D	-N	2	V		64		

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OBSERV-ATORY	OBSERVED UT				LOCATION					DURA-TION	IMPOR-TANCE	OBS.		MEASUREMENTS			REMARKS	
	DATE	START	MAX. PHASE	END	APPROX LAT.	APPROX MER. DIST.	CENTRAL DISTANCE	McMATH PLAGE REGION	CMP. DAY	MIN.		COND.	TYPE	TIME UT	MEAS. AREA Mill. of Disk	CORR. AREA Sq. Deg.		
	JUN																	
GRP67789	24	1528+2	1531+0	1538	N28	E21	.542	15373	26.2	10	-N				30	.4	E	
HTPR	24	1528	1531	1539	N28	E21	.542	15373	26.2	11	-F		C	1531	20	.2		
MCMA	24	1529	1531	1538D	N28	E21	.542	15373	26.2	9D	-N		C	1531	40	.5	E	
RAMY	24	1530	1531	1536	N25	E15	.456	15373	25.8	6	-B	4	C		27			
790 RAMY	24	1542	1547	1608	N17	W10	.307	15368	23.9	26	-N	3	C		31			Y5
791 RAMY	24	1733	1734	1756	S20	E27	.566	15375	26.8	23	-N	3	C		22			Y5
	24	1900	2140	NO FLARE PATROL														
792 PALE	24	2042	2043	2050	S20	E25	.544	15375	26.7	8	-N	3	C		26		F	Y5
793 CULG	25	0146	0150	0206	N20	W09	.340	15368	24.4	20	-F		C	0150	30	.3		Y5
794 CULG	25	0236	0238	0250	N26	E13	.453	15373	26.1	14	-F		C	0238	20	.2		Y5
795 CULG	25	0334	0344	0410	S18	E21	.483	15375	26.7	36	-F		C	0344	20	.2		Y5
796 CULG	25	0359	0400	0407	N18	W22	.450	15368	23.5	8	-F		C	0400	30	.3		Y5
797 CULG	25	0410	0410	0420	N18	E39	.661	15376	28.1	10	-F		C	0410	10	.1		Y5
798 CULG	25	0529E	0529	0532	N23	E08	.378	15373	25.8	3D	-F		P	0529	10	.1		Y5
799 CULG	25	0627E	0627U	0631D	S23	E16	.494	15375	26.5	4D	-F		P	0627	40	.5		Y5
800 KHAR	25	0740E	0759	0810D	N13	W28	.496	15368	23.2	30D	-F		P	0759			E	Y5
GRP67801	25	0800	0800+6	0817	N28	E12	.473	15373	26.2	17	-F						E	
CATA	25	0800	0800	0805	N28	E11	.468	15373	26.2	5	-N	1	C	0800	56	.6		
KHAR	25	0803E	0805	0819D	N29	E13	.493	15373	26.3	16D	-N		P	0806			E	
MEUD	25	0803E	0805	0810	N27	E13	.466	15373	26.3	7D	-F		C				E	
BUCA	25	0805E		0825	N28	E12	.473	15373	26.2	20D	-F		C	0808	31	.4		
KANZ	25	0806	0806	0822	N28	E12	.473	15373	26.2	16	-F		C					
802 KHAR	25	0840E		0910D	S12	W67	.927	15379	20.3	30D	-N		P	0847			DH	Y5
803 KHAR	25	0940E	0940	0950D	S28	W47	.812	15365	21.9	10D	-F		P				E	Y5
804 KHAR	25	1107E		1107D	N15	E09	.269	15368	26.1		-F		P				D	Y5
GRP67805	25	1140+0	1140+0	1155	N27	E35	.665	15376	28.1	15	-F				90	1.2	E	
CATA	25	1140	1140	1155	N27	E35	.665	15376	28.1	15	-N	2	C	1140	112	1.5		
KHAR	25	1140E	1140	1147D	N27	E36	.675	15376	28.2	7D	-F		P	1140	66	.8	E	
806 MCMA	25	1337	1342	1405D	N22	E28	.554	15376	27.7	28D	-N		C	1342	60	.7	E	Y5
807 MEUD	25	1642	1645	1650D	S19	W05	.370	15374	25.3	8D	-F		C				E	Y5
	25	1650	2138	NO FLARE PATROL														
	25	2154	2159	NO FLARE PATROL														
	25	2228	2240	NO FLARE PATROL														
808 CULG	25	2324	2328	2336	S10	W80	.986	15379	20.0	12	-F		C	2328	20			Y5
809 CULG	26	0108	0114	0127	N25	E29	.588	15376	28.2	19	-N		C	0114	40	.5		Y5
	26	0136	0153	NO FLARE PATROL														
810 ABST	26	0526	0531	0548	N16	E88	.999	15381	2.8	22	?F		C	0531	87		D	Y5
	IMP-1 NO		MEUD2	TACH1														
GRP67811	26	0818+2	0820+0	0840	S16	E07	.335	15375	26.9	22	-F				70	.7	EJ	
ABST	26	0818E	0820	0840D	S17	E05	.340	15375	26.7	22D	-F		P	0820	87	.9	EJ	
BUCA	26	0820E		0840D	S16	E07	.335	15375	26.9	20D	-F		C	0830	63	.7	E	
CATA	26	0820	0820	0840	S16	E07	.335	15375	26.9	20	-N	1	C	0820	56	.6		
812 KHAR	26	1103E		1103D	N23	E16	.437	15376	27.7		-F		V				D	Y5
GRP67813	26	1123+7	1130	1150	S16	W01	.314	15375	26.4	27	-N						EH	
			1137+3															
KHAR	26	1123E	1137	1150D	S16	W01	.314	15375	26.4	27D	-N		P	1132			EH	
MEUD	26	1129	1130	1143	S16	W04	.321	15375	26.2	14	-F		C				E	
CATA	26	1130	1140	1155	S17	W01	.331	15375	26.4	25	-N	2	C	1140	112	1.2		
814 KHAR	26	1207E	1210	1237D	S16	W02	.315	15375	26.4	30D	-N		P				E	Y5

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OBSERV-ATORY	OBSERVED UT				LOCATION					DURA-TION	IMPOR-TANCE	OBS.		MEASUREMENTS			REMARKS	
	DATE JUN	START	MAX. PHASE	END	APPROX LAT.	APPROX MER. DIST.	CENTRAL DISTANCE	McMATH PLAGE REGION	CMP DAY	MIN.		COND	TYPE	TIME UT	MEAS. AREA Mill. of Disk	CORR AREA Sq. Deg.		
815 KHAR	26	1220E		1240D	N13	W90	1.000	15370	19.8	20D	-F		P					Y5
816 KHAR	26	1227E	1237	1250D	N20	W12	.362	15368	25.6	23D	-F		P				E	Y5
GRP67817	26	1436E	1440	1456D	S16	W04	.321	15375	26.3	20	-N						EH	
KANZ	26	1436E	1440	1455D	S16	W04	.321	15375	26.3	19D	-N		C					
MCMA	26	1453E		1456D	S17	W04	.337	15375	26.3	3D	-N		P	1453	40	.5	EH	
818 KANZ	26	1440	1444	1454	N15	E78	.977	15381	2.5	14	-F		C					Y5
	26	1756	1804	NO FLARE PATROL														
	26	1858	1928	NO FLARE PATROL														
	26	2015	2036	NO FLARE PATROL														
819 MCMA	26	2036E		2040D	S17	W07	.350	15375	26.3	4D	-N		P	2036	40	.5	EH	Y5
	26	2040	2130	NO FLARE PATROL														
	26	2248	2305	NO FLARE PATROL														
	27	0024	0043	NO FLARE PATROL														
820 VORO	27	0102E		0123	S17	W08	.357	15375	26.4	21D	1B		C	0104	188	2.0	GE	Y5
821 VORO	27	0154	0156	0204	N15	E75	.965	15381	2.7	10	-N		C	0156	63		D	Y5
822 TACH	27	0456E		0519D	N11	W59	.858	15368	22.8	23D	-N		C	0507	44	.8	DI	Y5
823 ABST	27	0601E	0603	0611D	N31	E52	.836	15380	1.2	10D	?F		P	0603	87	1.6	DJK	Y5
	IMP.1 NO I CATA1																	
824 HTPR	27	0658	0705	0720	N26	E10	.430	15376	28.0	22	-F		C	0705	20	.2		Y5
GRP67825	27	0807	0809+3	0825	S17	W05	.342	15375	27.0	18	-F				20	.2	EJ	
HTPR	27	0807	0809	0823	S17	W05	.342	15375	27.0	16	-F		C	0809	20	.2	E	
ABST	27	0810E	0812	0821D	S15	W05	.311	15375	27.0	11D	-F		P	0812	61	.6	EJ	
BUCA	27	0810E		0827	S17	W04	.339	15375	27.0	17D	-F		C	0817	23	.3	E	
GRP67826	27	0816+6	0817	0847	N22	E07	.354	15376	27.9	31	-F						DJ	
ABST	27	0816E	0817	0823D	N22	E08	.360	15376	27.9	7D	-F		P	0817	70	.8	DJ	
BUCA	27	0822		0847	N22	E07	.354	15376	27.9	25	-N		C	0825	19	.2		
GRP67827	27	0838+5	0840	0853	N18	W41	.683	15368	24.3	15	-N				50	.7	E	
HTPR	27	0838	0840	0852	N18	W40	.672	15368	24.4	14	-N		C	0840	70	.9	E	
BUCA	27	0840		0856D	N20	W41	.691	15368	24.3	16D	-N		C	0845	31	.4		
ISTA	27	0843		0853	N15	W42	.686	15368	24.2	10	-F						E	
GRP67828	27	0916>9	0941 1003+1	1012	N15	E69	.934	15381	1.6	56	-N						EH	
KHAR	27	0916E	1003	1136D	N16	E65	.909	15381	2.3	140D	1N		P	0921			EHT	
MONT	27	0939	0941	0946	N15	E70	.940	15381	2.7	7	-F		C	0941	50			
HTPR	27	1001	1003	1017	N15	E69	.934	15381	2.6	16	1N		C	1003	100	2.4	E	
MEUD	27	1003	1004	1006D	N15	E70	.940	15381	2.7	3D	-F		C				E	
829 MCMA	27	1101	1107	1125D	N14	E70	.940	15381	2.7	24D	-F		C	1107	40	1.2	E	Y5
830 KHAR	27	1104E		1135D	N18	W42	.695	15368	24.3	31D	-F		P				D	Y5
831 MCMA	27	1105	1107	1115	N25	E07	.400	15376	28.0	10	-N		C	1107	35	.4	E	Y5
GRP67832	27	1110+2	1130 1140+5	1215	S18	W13	.408	15375	26.5	65	-N				120	1.3	EHK	
HTPR	27	1110	1140	1200	S17	W16	.423	15375	26.3	50	-N		C	1140	80	.8	EK	
MCMA	27	1112	1145	1240	S18	W14	.417	15375	26.4	88	-B		C	1145	120	1.3	EK	
KHAR	27	1113E	1130	1200D	S18	W12	.400	15375	26.6	47D	1N		P	1120	220	2.4	EH	
CATA	27	1125E	1141	1215D	S18	W13	.408	15375	26.5	50D	-N	2	P	1141	168	1.9		
833 MCMA	27	1130	1132	1145D	N25	E07	.400	15376	28.0	15D	-F		C	1132	30	.3	D	Y5
GRP67834	27	1145+5	1149+3	1203	N22	E04	.342	15376	27.8	18	-N				70	.8	EI	
KIEV	27	1145	1150	1200	N21	E06	.334	15376	27.9	15	-F		C	1150	100	1.3	DI	
HTPR	27	1147	1151	1200	N22	E04	.342	15376	27.8	13	-N		C	1151	60	.6	E	
KHAR	27	1148E	1149	1200D	N22	E02	.337	15376	27.6	12D	-N		P	1150			E	
MCMA	27	1148	1152	1205	N23	E04	.358	15376	27.8	17	-B		C	1152	50	.6	E	
CATA	27	1150	1150	1205	N23	E03	.355	15376	27.7	15	-B	2	C	1150	84	.9		
GRP67835	27	1158+1	1201	1207	N20	E90	1.000	15382	3.2	9	-N						X	
KHAR	27	1158E		1209D	N21	E90	1.000	15382	4.2	11D	-N		P	1158			X	
MCMA	27	1159	1201	1205	N20	E90	1.000	15382	4.2	6	-N		C	1201				

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OBSERVATORY	OBSERVED UT				LOCATION					DURATION	IMPORTANCE	OBS		MEASUREMENTS			REMARKS	
	DATE	START	MAX. PHASE	END	APPROX LAT.	APPROX MER. DIST.	CENTRAL DISTANCE	McMATH PLAGE REGION	CMR DAY	MIN.		COND.	TYPE	TIME UT	MEAS. AREA Mill. of Disk	CORR. AREA Sq. Deg.		
	JUN																	
GRP67836	27	1242+2	1243+2	1254	N14	E70	.940	15381	1.8	12	-N				35		E	
KHAR	27	1230E	1243	1303D	N15	E70	.940	15381	2.8	33D	-N		P				TE	
HTPR	27	1242	1243	1254	N14	E67	.921	15381	2.6	12	-F		C	1243	30	.7	E	
MCMA	27	1244	1245	1254	N14	E70	.940	15381	2.8	10	-N		C	1245	40	1.2	E	
837 MCMA	27	1340E		1410D	N20	E79	.981	15382	3.5	30D	-N		C	1350			EKLY	Y5
838 HTPR	27	1358	1400	1408	N17	W30	.543	15368	25.3	10	-F		C	1400	30	.3	E	Y5
	27	1525	1530	NO FLARE PATROL														
	27	1541	1544	NO FLARE PATROL														
	27	1602	1611	NO FLARE PATROL														
	27	1613	1626	NO FLARE PATROL														
	27	1649	1654	NO FLARE PATROL														
	27	1709	1754	NO FLARE PATROL														
	27	1823	1854	NO FLARE PATROL														
839 MCMA	27	1916	1921	1930D	N14	E66	.915	15381	2.8	14D	-N		C	1921	50	1.3	D	Y5
840 MCMA	27	1921	1924	1930	S17	W13	.395	15375	26.8	9	-B		C	1924	80	.9	EH	Y5
841 MCMA	27	1922	1927	1933	N27	E04	.421	15376	28.1	11	-N		C	1927	25	.3	D	Y5
842 VORO	28	0112	0117	0130	N16	E62	.886	15381	2.7	18	?F		C	0117	197	4.4	EL	Y5
	IMP-1 NOAA PALE1																	
GRP67843	28	0244	0246 0256	0307	S20	W16	.461	15375	26.9	23	2B				640	7.1		
VORO	28	0244	0246	0300	S16	W22	.478	15375	26.5	16	2N		C	0246	717	8.2		
PALE	28	0248E	0248	0252D	S20	W16	.461	15375	26.9	4D	2B	3	V		570		FDE	
TEHR	28	0252E	0256	0314	S20	W15	.452	15375	27.0	22D	-B	2	C		127		F	
GRP67844	28	0748+3	0751+2	0802	S22	W24	.558	15375	26.5	14	-F						E	
HTPR	28	0748	0751	0800	S23	W24	.568	15375	26.5	12	-F		C	0751	50	.5	E	
KANZ	28	0751	0753	0803	S22	W24	.558	15375	26.5	12	-F		C					
GRP67845	28	0837+4	0841+4	0856	N14	E58	.852	15381	1.7	19	-F				60	1.2	EJ	
ABST	28	0837	0841	0848D	N14	E60	.869	15381	2.9	11D	-F		P	0841	87	1.8	FJ	
MONT	28	0838	0841	0859	N15	E58	.853	15381	2.7	21	-N		C	0841	60		E	
HTPR	28	0840	0842	0850	N14	E58	.852	15381	2.7	10	-F		C	0842	40	.8	E	
KANZ	28	0841	0845	0856	N15	E58	.853	15381	2.7	15	-F		C					
GRP67846	28	1046+3	1053+0	1123	S18	W44	.742	15374	25.1	37	-F				50	.7	EL	
HTPR	28	1046	1053	1115	S18	W43	.732	15374	25.2	29	-F		C	1053	60	.8		
MCMA	28	1049	1053	1130D	S18	W45	.753	15374	25.1	41D	-N		C	1053	40	.6	EL	
847 MCMA	28	1125	1136	1215	N23	W08	.373	15376	27.9	50	-N		C	1136	45	.5	E	Y5
GRP67848	28	1305+4	1311+1	1323	S21	W27	.579	15375	26.5	18	-N				50	.6		
MCMA	28	1305	1312	1324	S23	W27	.597	15375	26.5	19	-N		C	1312	50	.6	E	
TEHR	28	1306E	1312	1318	S19	W28	.573	15375	26.4	12D	-B	2	C		64		F	
HTPR	28	1308	1311	1322	S23	W27	.597	15375	26.5	14	-F		C	1311	40	.4	E	
RAMY	28	1309	1311	1324	S19	W22	.508	15375	26.9	15	-B	4	C		36		F	
849 HTPR	28	1533	1533	1538	N27	W07	.429	15376	28.1	5	-F		C	1533	60	.7	E	Y5
850 MCMA	28	1535	1540	1600D	N19	W11	.337	15376	27.8	25D	-N		C	1540	50	.7	D	Y5
851 RAMY	28	1535	1538	1601	N17	W41	.679	15368	25.6	26	-B	3	C		25			Y5
852 RAMY	28	1546	1552	1557	S15	E67	.931	15384	3.7	11	-F	3	C		13			Y5
GRP67853	28	1551+0	1552+0	1604	N16	E50	.777	15381	1.4	13	-N				50	.8	EL	
MCMA	28	1551	1552	1601	N15	E52	.796	15381	2.6	10	-N		C	1552	50	.9	EL	
RAMY	28	1551	1552	1606	N17	E48	.758	15381	2.3	15	-N	3	C		63			
854 RAMY	28	1614	1614	1627	N17	W42	.691	15368	25.5	13	-N	3	C		18			Y5
855 RAMY	28	1615	1615	1621	N17	E48	.758	15381	2.3	6	-N	3	C		16			Y5
GRP67856	28	1636+9	1652+4	1710	N15	W45	.720	15368	25.3	34	-B				80	1.2	E	
RAMY	28	1636	1656	1710	N17	W42	.691	15368	25.5	34	-B	3	C		76			
MCMA	28	1643	1655	1714	N15	W48	.754	15368	25.1	31	-B		C	1655	80	1.3	E	
HTPR	28	1645	1652	1708	N14	W45	.718	15368	25.3	23	-N		C	1652	80	1.1	E	

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OBSERV-ATORY	OBSERVED UT				LOCATION					DURA-TION	IMPOR-TANCE	OBS.		MEASUREMENTS			REMARKS	
	DATE	START	MAX. PHASE	END	APPROX LAT.	APPROX MER. DIST.	CENTRAL DISTANCE	McMATH PLAGE REGION	CMP DAY	MIN.		CONC	TYPE	TIME UT	MEAS. AREA Mill. of Disk	CORR AREA Sq. Deg.		
	JUN																	
GRP67857	28	1720+0	1722+1	1741	S19	W25	.540	15375	26.8	21	-N				60	.7	K	
HTPR	28	1720	1722	1735	S20	W25	.549	15375	26.8	15	-F		C	1722	60	.7	EK	
RAMY	28	1720	1723	1747	S19	W25	.540	15375	26.8	27	-B	3	C		57		F	
858 HTPR	28	1800	1808	1818	N27	W08	.433	15376	28.2	18	-F		C	1808	20	.2	E	Y5
GRP67859	28	1850E	1852+2	1905	N15	W47	.743	15368	25.3	15	-N				50	.8	U	
MCMA	28	1850E	1852	1905	N15	W49	.765	15368	25.1	15D	-B		C	1852	50	.8	D	
PALE	28	1853E	1854U	1902D	N16	W46	.734	15368	25.3	9D	-N	3	C		55		U F	
860 MCMA	28	1912	1914	1928	N26	W10	.429	15376	28.1	16	-N		C	1914	60	.7	E	Y5
861 MCMA	28	1955	2010	2030D	S31	E23	.643	15377	30.6	35D	-F		C	2010	40	.5	E	Y5
862 MCMA	28	2018	2026	2033	N27	W09	.438	15376	28.2	15	-N		C	2026	70	.8	E	Y5
863 MCMA	28	2020	2027	2038D	N15	E49	.765	15381	2.5	18D	-N		C	2027	90	1.4	E	Y5
	28	2043	2100	NO FLARE PATROL														
864 MCMA	28	2108		2125D	N15	E48	.754	15381	2.5	17D	-B		C	2122	100	1.5	EU	Y5
	29	0148	0149	NO FLARE PATROL														
865 TEHR	29	0240E	0244	0258	S20	W29	.593	15375	26.9	18D	-B	2	C		159		F	Y5
GRP67866	29	0335E	0335 0344	0354	S18	W30	.588	15375	26.9	19	-N						FU	
MANI	29	0335E	0335U	0350	S16	W31	.586	15375	26.8	15D	-N		P		80	1.0	U	
TEHR	29	0340E	0344	0358	S20	W29	.593	15375	27.0	18D	-B	2	C		159		F	
GRP67867	29	0432E	0434 0442	0449	N24	W15	.436	15376	28.1	17	-N							
MANI	29	0432E	0434	0449	N26	W14	.454	15376	28.1	17D	-F		P		40	.4		
TEHR	29	0434E	0442	0448	N22	W17	.430	15376	27.9	14D	-B	2	C		95		DE	
GRP67868	29	0501+0	0501+5	0512	N26	W14	.454	15376	28.2	11	-F							
MANI	29	0501	0501	0508	N26	W14	.454	15376	28.2	7	-F		P		20	.2	F	
CULG	29	0501E	0502	0512	N25	W13	.433	15376	28.2	11D	-N		P	0512	20	.2		
ABST	29	0503E	0506	0512	N27	W15	.474	15376	28.1	9D	-F		P	0506	61	.7	D	
GRP67869	29	0518+4	0537+6 0550	0601	N19	W50	.783	15368	25.5	43	-F						K	
CULG	29	0518E	0543U	0623	N19	W50	.783	15368	25.5	65D	-N		C	0543	80	1.4	F	
HTPR	29	0522	0537	0553	N17	W51	.789	15368	25.4	31	-F		C	0537	30	.5	EK	
KANZ	29	0537	0550	0601	N19	W50	.783	15368	25.5	24	-F		C					
870 HTPR	29	0546	0549	0552	S17	W37	.662	15375	26.5	6	-F		C	0549	10	.1		Y5
GRP67871	29	0702>9	0715 0731	0813	N15	E44	.708	15381	1.6	71	-F				70	1.0	EJK	
ABST	29	0702	0715	0813	N14	E46	.729	15381	2.7	71	-F		C	0715	52	.8	EJ	
KANZ	29	0712		0726A	N15	E45	.720	15381	2.7	14D	-F		C					
ABST	29	0714	0731	0741	N17	E40	.667	15381	2.3	27	-F		C	0716	87	1.2	DK	
872 ABST	29	0708	0714	0735	S17	E60	.886	15384	3.8	27	-F		C	0714	44	1.0	DJ	Y5
873 HTPR	29	0826	0828	0835	S18	W40	.700	15375	26.4	9	-F		C	0828	20	.3		Y5
GRP67874	29	0830+5	0833+3	0850	N15	E34	.584	15381	.9	20	-N				40	.5	D	
ABST	29	0830	0833	0850	N15	E34	.584	15381	1.9	20	-N		C	0833	52	.7	D	
ABST	29	0830	0833	0850D	N15	E36	.610	15381	2.1	20D	-N		P	0833	44	.6	D	
HTPR	29	0835	0836	0847	N16	E34	.588	15381	1.9	12	-F		C	0836	30	.3	E	
875 KHAR	29 IMP.1	0900E NO	0927 HTPR2	0935D CATA1	N20 KANZ1	E90	1.000	15385	6.1	35D	?N		P				D	Y5
GRP67876	29	0953	0954+1 1005	1018	N19	E90	1.000	15385	5.2	25	-N							
MONT	29	0953E	1005	1021	N18	E90	1.000	15385	6.2	28D	-N		C	1005	70			
HTPR	29	0953	0955	1005	N20	E90	1.000	15385	6.2	12	-N		C	0955	60			
KHAR	29	0954E	0954	1013D	N21	E90	1.000	15385	6.2	19D	1N		P	0956				
ZURI	29	1006E	1006	1020	N19	E90	1.000	15385	6.2	14D	-F		P	1006	100			
KANZ	29	1010E		1021	N19	E87	.998	15385	5.9	11D	-N		C					
877 KHAR	29 IMP.1	1007E NO	HTPR2	1103D MONT2	N23 ZURI2	W26	.536	15376	27.5	56D	?N	*	P	1043	165	2.0	E	Y5

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OBSERVATORY	OBSERVED UT				LOCATION					DURATION	IMPORTANCE	OBS.		MEASUREMENTS			REMARKS
	DATE	START	MAX. PHASE	END	APPROX LAT.	APPROX MER. DIST.	CENTRAL DISTANCE	McMATH PLAGE REGION	CMR DAY	MIN.		CONF.	TYPE	TIME UT	MEAS. AREA Mill. of Disk	CORR. AREA Sq. Deg.	
	JUN																
878 KHAR	29	1007E		1043D	N17	E43	.702	15381	2.6	36D	-F		P				OH Y5
GRP67879	29	1030+0	1030+2	1048	N15	W58	.852	15368	25.1	18	-N				40	.8	
CATA	29	1030	1030	1035D	N10	W58	.848	15368	25.1	5D	-N	2	P	1030	56	1.0	
HTPR	29	1030	1031	1045	N17	W60	.871	15368	24.9	15	-F		C	1031	20	.4	
ZURI	29	1030	1032	1050	N15	W58	.852	15368	25.1	20	-N		C	1032	40		
GRP67880	29	1043>9	1117 1232	1240	N19	E90	1.000	15385	5.2	117	-N						
KHAR	29	1043E	1117	1233D	N19	E90	1.000	15385	6.2	110D	1N		P				T
ZURI	29	1228	1232	1240	N19	E90	1.000	15385	6.3	12	-F		C	1232	50		
881 KHAR	29	1102E		1111D	N17	E43	.702	15381	2.7	9D	-F		P				D Y5
882 RAMY	29	1134	1141	1154	N16	E36	.614	15381	2.2	20	-N	3	C		26		Y5
GRP67883	29	1152>9	1210+3 1220+1	1230	S19	W39	.695	15375	26.6	38	-N						E
RAMY	29	1152	1210	1301	S19	W35	.651	15375	26.9	69	-B	3	C		82		
HTPR	29	1209	1211	1220	S21	W41	.726	15375	26.4	11	-F		C	1211	20	.3	
KHAR	29	1210E	1213	1223D	S18	W47	.773	15375	26.0	13D	-F		P				E
HTPR	29	1218	1221	1225	S18	W38	.679	15375	26.7	7	-F		C	1221	10	.1	
KHAR	29	1220E	1220	1230D	S18	W40	.700	15375	26.5	10D	-F		P				D
GRP67884	29	1215+1	1216+2	1224	N24	W21	.492	15376	27.9	9	-N				20	.2	E
HTPR	29	1215	1217	1222	N26	W19	.495	15376	28.1	7	-F		C	1217	10	.1	
MCMA	29	1216	1218	1223	N27	W20	.515	15376	28.0	7	-N		C	1218	25	.3	E
RAMY	29	1216	1216	1224	N23	W22	.492	15376	27.9	8	-B	3	C		22		
KHAR	29	1223E		1233D	N23	W27	.547	15376	27.5	10D	-F		P				E
885 RAMY	29	1230	1232	1235	N15	W55	.825	15368	25.4	5	-N	3	C		16		F Y5
886 ZURI	29	1244	1248	1256	N19	E90	1.000	15385	6.3	12	-F		C	1248	50		Y5
887 ZURI	29	1414E	1418	1444	N19	E90	1.000	15385	6.3	30D	?F		P	1418	120		Y5
	IMP-1 NO. HTPR2			MCMA2	RAMY2												
GRP67888	29	1414+2	1416+4	1432	N26	W20	.504	15376	28.1	18	-B				150	1.8	EH
RAMY	29	1414	1417	1432	N25	W20	.493	15376	28.1	18	-B	*	C		157		
HTPR	29	1414	1417	1430	N27	W20	.515	15376	28.1	16	-B	*	C	1417	180	2.0	E
MCMA	29	1414	1416	1435	N26	W21	.513	15376	28.0	21	-B	*	C	1416	100	1.3	EH
TEHR	29	1415E	1420	1431	N24	W22	.502	15376	27.9	16D	-B	*	C		127		
ZURI	29	1416	1416	1432	N27	W20	.515	15376	28.1	16	1B	*	C	1416	200	2.4	
889 MCMA	29	1542	1543	1550	S22	W43	.751	15375	26.4	8	-N		C	1543	40	.6	E Y5
GRP67890	29	1600+7	1608+2	1631	S15	E54	.832	15384	2.7	31	-F				60	1.1	
MCMA	29	1600	1610	1640D	S16	E55	.843	15384	3.8	40D	-F	*	C	1610	70	1.3	E
ZURI	29	1606	1608	1614D	S15	E54	.832	15384	3.7	8D	-F	*	P	1608	60	1.2	
RAMY	29	1607	1608	1622	S15	E54	.832	15384	3.7	15	-N	*	C		22		F
891 ZURI	29	1602	1604	1608	S21	W44	.756	15375	26.4	6	-F		C	1604	80	1.3	Y5
892 RAMY	29	1636	1637	1647	N16	E33	.575	15381	2.2	11	-N	3	C		25		F Y5
GRP67893	29	1816+1	1820	1844	N15	E35	.597	15381	1.4	28	-B						U
MCMA	29	1816E		1841D	N15	E38	.635	15381	2.6	25D	-B		C	1830	80	1.1	E
PALE	29	1817	1820	1844	N16	E32	.562	15381	2.2	27	-B	3	C		103		U F
894 PALE	29	1831	1835	1838	N22	W27	.539	15376	27.7	7	-N	3	C		25		DE Y5
GRP67895	29	1901+0	1901	1912D	N15	E33	.571	15381	1.3	11	-N						E
MCMA	29	1901E		2005D	N15	E35	.597	15381	2.4	64D	-N		C	1914	125	1.7	E
PALE	29	1901	1901	1912	N16	E32	.562	15381	2.2	11	-N	3	C		26		DE
896 PALE	29	1913E	1915	1940	N19	W67	.923	15368	24.8	27D	-F	3	C		95		FDE Y5
897 PALE	29	1920	1923	1945	N16	E26	.483	15381	1.8	25	-N	3	C		36		DE Y5
898 PALE	29	2134	2146	2153	N22	W29	.562	15376	27.7	19	-N	3	C		27		DE Y5
899 PALE	29	2134	2155	2155	N16	W61	.878	15368	25.3	21	-N	3	C		27		FDE Y5
GRP67900	29	2203+3	2214+0	2231	N26	W24	.542	15376	28.1	28	-B				160	1.9	U
CULG	29	2203	2214	2230	N27	W23	.542	15376	28.2	27	-B		C	2214	110	1.3	
PALE	29	2206	2214	2232	N25	W25	.543	15376	28.0	26	1B	3	C		206		UDE

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OBSERV-ATORY	OBSERVED UT				LOCATION					DURA-TION	IMPOR-TANCE	OBS.		MEASUREMENTS			REMARKS	
	DATE	START	MAX. PHASE	END	APPROX LAT.	APPROX MER. DIST.	CENTRAL DISTANCE	McMATH PLAGE REGION	CMP. DAY	MIN.		CONC	TYPE	TIME UT	MEAS. AREA Mill. of Disk	CORR AREA Sq. Deg		
	JUN																	
GRP67901	29	2206>9	2217+3	2233	N18	E48	.760	15382	2.5	27	-F				45	.7		
CULG	29	2206	2220	2245	N15	E45	.720	15382	3.3	39	-F		C	2220	60	.8	F	
PALE	29	2217	2217	2221	N22	E51	.800	15382	3.8	4	-N	3	C		26		FDE	
902 CULG	29	2216	2217	2218	N20	W61	.882	15368	25.4	2	-N		C	2217	10	.2		Y5
GRP67903	29	2221+5	2233 2243	2303D	N17	W59	.863	15368	25.5	42	1N				130	2.6	U	
CULG	29	2221	2243E	2303D	N18	W57	.847	15368	25.7	42D	1N		P	2243	130	2.5	FU	
PALE	29	2226	2233	2236D	N16	W61	.878	15368	25.4	10D	1B	3	V		131		FDE	
904 CULG	29	2303	2307	0000	N18	W56	.838	15368	25.8	57	-B		C	2337	80	1.5	SFW	Y5
905 CULG	29	2347	2355U	0027	N23	W29	.569	15376	27.8	40	-F		C	2355	40	.5		Y5
906 CULG	30	0105E	0107	0130	S20	W50	.810	15375	26.3	25D	-F		C	0107	40	.7		Y5
907 PALE	30	0123	0123	0125	N16	W63	.893	15368	25.3	2	-N	3	C		16		F	Y5
GRP67908	30	0149	0155+7 0219	0258	N17	W60	.871	15368	25.6	69	-N						F	
CULG	30	0149	0155U	0311	N19	W60	.873	15368	25.6	82	-N		C	0155	80	1.6	F	
MITK	30	0153E	0202	0230	N18	W61	.880	15368	25.5	37D	1F		C	0202	110	2.4	E	
PALE	30	0215	0237	0301	N16	W64	.901	15368	25.3	46	-B	3	C		105		F	
TEHR	30	0215E	0219	0255	N17	W58	.854	15368	25.7	40D	-N	2	C		127			
909 PALE	30	0236	0236	0250	N22	W31	.584	15376	27.8	14	-N	3	C		27		F	Y5
910 CULG	30	0402E	0402E	0420D	N26	W25	.551	15376	28.3	18D	-F		P	0402	70	.8		Y5
911 ABST	30 IMP+1	0704 NO	0707 KIEV1	0710 CATA1	N22 MITK1	E85	.995	15385	6.7	6	?F		C	0707	87		D	Y5
GRP67912	30	0744+1	0751+0	0806	N25	W30	.594	15376	28.1	22	-N				100	1.3	EH	
KANZ	30	0744	0751	0806	N26	W30	.602	15376	28.1	22	-B		C					
MONT	30	0745	0751	0805	N21	W29	.554	15376	28.1	20	-N		C	0751	80		EH	
ABST	30	0747E	0750	0750D	N25	W30	.594	15376	28.1	3D	-N		P	0750	131	1.7	E	
GRP67913	30	0910>9	0919+6	0947	N22	W36	.641	15376	27.7	37	-N							
MONT	30	0910	0923	0944	N23	W35	.636	15376	27.8	34	-N		C	0923	180			
ZURI	30	0913E	0919	0949	N23	W38	.669	15376	27.5	36D	-N		P	0919	70	1.0		
KANZ	30	0917	0925	0940	N22	W38	.664	15376	27.5	23	-F		C					
CATA	30	0920	0925	0950	N21	W35	.625	15376	27.8	30	1B	2	C	0925	224	2.9		
914 KANZ	30	0944	0948	1002	N23	E86	.997	15385	6.9	18	-F		C					Y5
GRP67915	30	1051+1	1053+3	1112	N17	E18	.386	15381	.8	21	-B				140	1.5		
ZURI	30	1051E	1053	1107D	N16	E19	.389	15381	1.9	16D	-B		P	1053	140	1.6		
HCMA	30	1052	1053	1113	N17	E18	.386	15381	1.8	21	-B		C	1053	80	.9	E	
KANZ	30	1052	1056	1112	N17	E19	.399	15381	1.9	20	-B		C					
TEHR	30	1052	1054	1112	N18	E18	.396	15381	1.8	20	-B	2	C		190		F	
GRP67916	30	1145+7	1149+4	1225	N19	E31	.565	15381	1.8	40	-N						E	
ZURI	30	1145	1149	1211D	N19	E31	.565	15381	2.8	26D	1F		P	1149	200	2.6		
KANZ	30	1145	1153	1225	N18	E31	.559	15381	2.8	40	-N		C					
HCMA	30	1146	1149	1159D	N19	E31	.565	15381	2.8	13D	-B		C	1149	60	.8	E	
CATA	30	1150	1150	1200D	N21	E30	.566	15381	2.7	10D	-B	2	C	1150	140	1.7		
RAMY	30	1152	1153	1156D	N16	E22	.429	15381	2.1	4D	-N	2	C		29			
GRP67917	30	1252+2	1257+3	1303	N25	W35	.648	15376	27.9	11	-N							
KANZ	30	1252	1300	1303	N27	W33	.640	15376	28.1	11	-N		C					
RAMY	30	1254	1257	1303	N23	W36	.647	15376	27.8	9	-B	3	C		62			
HCMA	30	1254	1258	1304	N25	W35	.648	15376	27.9	10	-N		C	1258	50	.7	E	
918 KANZ	30	1300		1407	N21	E79	.981	15385	6.5	67	-N		C					Y5
GRP67919	30	1331+5	1336+2	1353	N19	E30	.553	15381	1.8	22	-N				70	.8		
HCMA	30	1331	1338	1355	N19	E32	.577	15381	3.0	24	-B		C	1338	60	.8	E	
KANZ	30	1333	1337	1400	N19	E31	.565	15381	2.9	27	-N		C					
TEHR	30	1334E	1336	1342	N20	E25	.498	15381	2.4	8D	-N	2	C		64		F	
RAMY	30	1336	1337	1350	N19	E30	.553	15381	2.8	14	-B	3	C		95			
920 RAMY	30	1411	1411	1427	N19	E31	.565	15381	2.9	16	-N	3	C		20			Y5

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OBSERVATORY	OBSERVED UT				LOCATION					DURATION	IMPORTANCE	OBS.		MEASUREMENTS			REMARKS	
	DATE JUN	START	MAX. PHASE	END	APPROX LAT.	APPROX LONG. DIST.	CENTRAL DISTANCE	McMATH PLAGE REGION	CMP. DAY	MIN.		CONG	TYPE	TIME UT	MEAS. AREA Mill. of Disk	CORR. AREA Sq. Deg.		
GRP67921	30	1445+3	1450+4	1525	N18	W68	.929	15368	25.5	40	1B				170			
RAMY	30	1445	1450	1525	N17	W68	.928	15368	25.5	40	1B	3	C		206		FDE	
KANZ	30	1446	1454	1525	N18	W66	.916	15368	25.7	39	1N		C					
MCMA	30	1448	1450	1516D	N18	W68	.929	15368	25.5	28D	1B		C	1450	125	3.7	E	
922 KANZ	30	1454	1506	1506D	N20	E75	.966	15385	6.2	12D	-N		C					Y5
GRP67923	30	1525+2	1543+1	1603	S15	E41	.698	15384	2.7	38	-B							
KANZ	30	1525	1543	1553D	S15	E41	.698	15384	3.7	28D	-B		C					
RAMY	30	1527	1544	1603	S15	E41	.698	15384	3.7	36	-B	3	C		148			
924 MCMA	30	1631E		1635D	N27	W35	.661	15376	28.1	4D	-N		P	1631	20	.3	D	Y5
GRP67925	30	1704E	1718	1718D	N26	W36	.665	15376	28.0	14	-B						U	
MCMA	30	1704E		1718D	N27	W36	.671	15376	28.0	14D	-B		P	1704	50	.7	E	
PALE	30	1706E	1710	1711D	N25	W36	.658	15376	28.0	5D	1B	3	C		182		U F	
926 PALE	30	1709E	1713	1719	N18	E28	.521	15381	2.8	10D	-N	3	C		34		DE	Y5
927 PALE	30	1815E	1846U	1846D	N22	W41	.697	15376	27.7	31D	-N	3	C		58		DE	Y5
GRP67928	30	1838>9	1845+4	1903	N19	E75	.966	15385	5.4	25	-B				60			
RAMY	30	1838	1845	1903	N20	E78	.977	15385	6.6	25	-B	3	C		76		F	
PALE	30	1848	1849	1857D	N19	E72	.952	15385	6.2	9D	-B	3	C		41		FDE	
929 RAMY	30	1919	1921	1930	N23	W39	.680	15376	27.9	11	-B	3	C		60			Y5
930 PALE	30	2107E	2107U	2117	N22	W42	.708	15376	27.7	10D	-N	3	C		40		DE	Y5
931 PALE	30	2113E	2118U	2127D	N15	E15	.329	15381	2.0	9D	-N	3	C		32		DE	Y5
932 PALE	30	2146E	2148U	2150D	N15	E15	.329	15381	2.0	4D	-N	3	C		20		DE	Y5
	30	2204	2205	NO FLARE PATROL														
GRP67933	30	2345+6	2353+3	0007	N24	W33	.620	15376	28.5	22	-N							
PALE	30	2345	2353	0010	N22	W30	.572	15376	28.7	25	-N	*	C		64		FDE	
CULG	30	2351	2356	0003	N26	W37	.675	15376	28.2	12	-N	*	P	2356	20	.3		
	30	2400	0252	NO FLARE PATROL														

DAILY FLARE INDICES

Includes all Flares

JUNE 1978

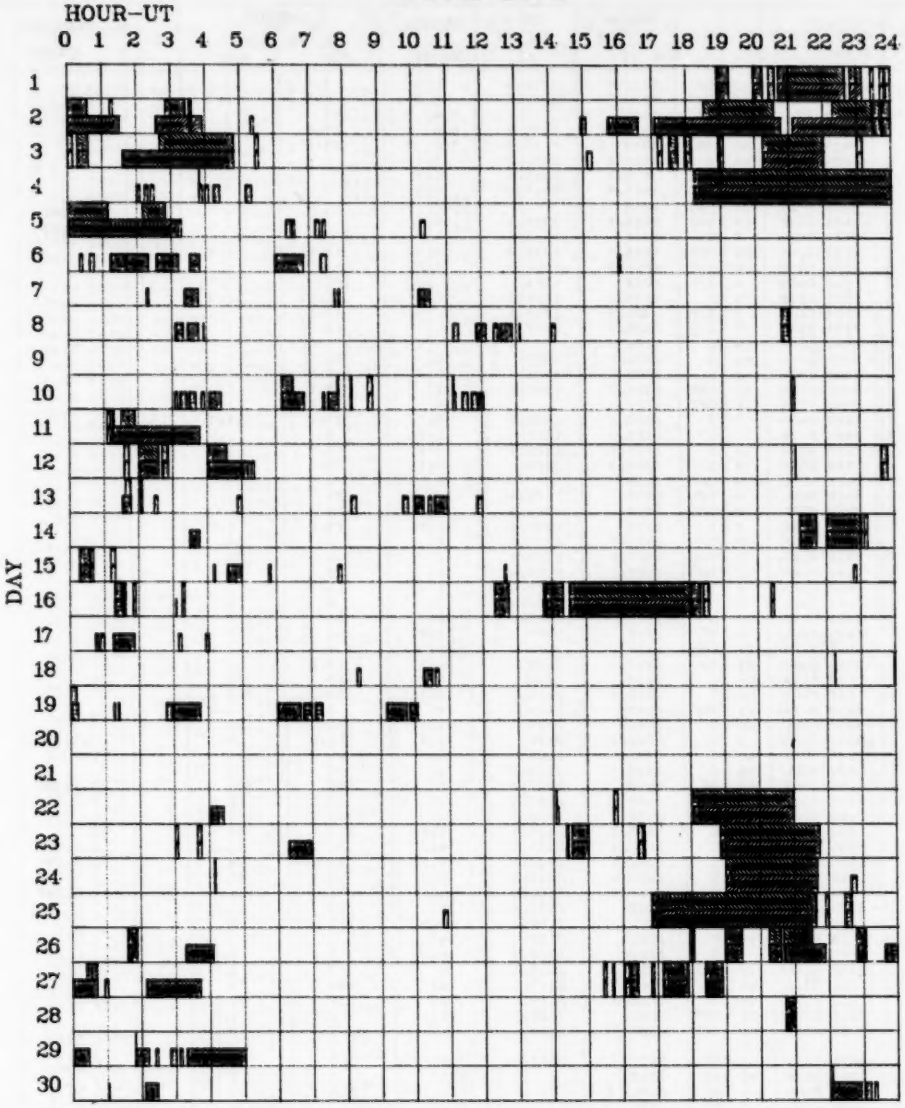
Date	Flare Index	HR. OBS.	Date	Flare Index	HR. OBS.	Date	Flare Index	HR. OBS.
780601	165.30	19.9	780611	12.37	23.5	780621	51.95	24.0
780602	29.03	19.4	780612	85.04	22.4	780622	636.66	20.9
780603	5.50	18.7	780613	86.53	23.8	780623	101.06	20.2
780604	11.64	17.1	780614	31.82	22.4	780624	57.29	21.3
780605	71.46	23.3	780615	44.63	23.5	780625	66.99	18.9
780606	1.90	24.0	780616	32.38	18.5	780626	43.65	21.6
780607	7.81	24.0	780617	84.34	24.0	780627	105.20	21.8
780608	5.96	23.8	780618	45.60	23.8	780628	277.40	23.7
780609	1.32	24.0	780619	26.03	24.0	780629	109.10	24.0
780610	11.48	23.3	780620	55.52	24.0	780630	97.32	21.1

When no Flare Index is given, it is 0 for that day.

INTERVALS OF NO FLARE PATROL OBSERVATION

FOR PRECEDING SOLAR FLARE TABLE

JUNE 1978



Observatories included in total patrol:

Abastumani	Haute Provence	Kanzelhohe	Lvov	Monte Mario	Upice
Athenes	Herstmonceux	Kharkov	Manila	Palehua	Voroshilov
Bucharest	Holloman	Kiev	McMath-Hulbert	Ramey	Wendelstein
Catania	Huancayo	Kodaikanal	Meudon	Tashkent	Zurich
Culgoora	Instanboul	Locarno	Mitaka	Tehran	

Times of no flare patrol are shown by the shaded area for each day divided into times of no cinematographic patrol (bottom half of day) and times of neither visual nor cinematographic patrol (top half of day).

SOLAR RADIO EMISSION
OUTSTANDING OCCURRENCES

JUNE 1978

JUN 1978	FREQUENCY	STATION	TYPE	STARTING TIME UT	TIME OF MAXIMUM UT	DURATION MINUTES	FLUX DENSITY 10^{-22} Wm^{-2} Hz^{-1} PEAK	FLUX DENSITY MEAN	INT	POLARIZATION OR REMARKS
1	1415	MANI	2 S/F	0200.9	0201.5	1.9	3.7	1.2		
	2695	MANI	2 S/F	0201.3	0201.9	1.5	7.9	2.6		
	260	ONDR	44 NS	0625		524 D	61			
	245	SGMR	44 NS	0913 E	2033.3	896 D	73.6			3
	410	SGMR	44 NS	0913 E	2118.8	896 D	24.1			3
	29	UPIC	45 C	0814.8	0816.2	2.1				
	33	UPIC	45 C	0815.7	0816.4	1.5				
	9100	ARCE	1 S	0817.5	0817.9	1.5				
	9100	ARCE	29 PBI	0819		18				
	1420	ARCE	20 GRF	0914.7	0928.4	49.5				
	9100	ARCE	3 S	0928	0928.6	4				ATM ATT
	9100	GORK	20 GRF	1028.4	1028.8	7.8	10.6	4.5		
	260	ONDR	4 S/F	1202.7	1202.7	1.2	219 D			
	260	ONDR	4 S/F	1228	1228	.5	189			
	4995	ATHN	3 S	1323.1	1328.5	21.4	41.1	12.3		
	7000	SAOP	2 S/F	1324.3	1328.6		36.2			
	7000	SAOP	1 S	1324.3	1325.9		18.1			
	7000	SAOP	46 C	1324.3						
	4995	BOUL	46 C	1324.5	1328	5	21	7		
	8800	ATHN	3 S	1324.7	1328.7	10.3	42.6	12.8		
	9400	HUAN	21 GRF	1324.7	1351.7	27	8.2			0
	2800	OTTA	21 GRF	1324		34	2.8	1.4		
	4995	SGMR	3 S	1325.2	1328.5	5.8	35.3	14.1		
	2800	OTTA	1 S	1325.3	1326	1.5	3	1.5		
	2695	ATHN	3 S	1325.3	1328.7	8.4	19.3	5.8		
	8800	SGMR	3 S	1325.9	1329	5.1	25.3	10.1		
	1470	BERL	4 S/F	1325		4				
	3000	BERL	4 S/F	1325	1328.4	15	20			
	9500	BERL	4 S/F	1325	1328.3	4.2	18			
	2695	SGMR	3 S	1326	1328.5	4.5	19.5	7.8		
	10400	BERN	2 S/F	1327.2	1328.6	2	6	18		
	8900	BERN	2 S/F	1327.2	1328.6	2	13	36		0
	8400	BERN	2 S/F	1327.2	1328.6	2	12	32		0
	9400	HUAN	3 S	1327.7	1329.3	1.6	24.6			0
	1420	BOUL	2 SF	1327	1327.5	2	2	1		
	2300	OTTA	3 S	1328	1328.7	2.5	15	5		
	2695	BOUL	4 SF	1328	1329	2.5	13	4		
	2800	OTTA	22 GRF	1415	1514	115	4.2	2.1		
	9400	HUAN	20 GRF	2020.3	2125	64.7	19.6			0
	200	HIRA	46 C	2033	2034	2	200	70		WL
	100	HIRA	46 C	2033.5	2034.5	1.5	630	200		0
	2300	OTTA	21 GRF	2100	2118	78	3.6	1.4		
	4995	BOUL	46 C	2100	2103	14.5	29	10		
	8800	SGMR	3 S	2101.5	2104	3.5	12.6	5		2,5,SWF
	200	HIRA	46 C	2101.5	2103	6	1500	500		WL
	1420	BOUL	46 C	2101	2102.5	8	20	7		
	245	SGMR	48 GB	2102	2102.3	5	876	351		2,5,SWF
	2695	SGMR	3 S	2102	2103.5	7	37.8	15.1		2,5,SWF
	100	HIRA	46 C	2102	2102.5	4	9000	2000		WL
	500	HIRA	45 C	2102.3	2105.1	4.5	120	50		SR
	4995	SGMR	3 S	2102.3	2103.5	4.7	31	12.4		2,5,SWF
	1415	SGMR	3 S	2102.3	2103.2	5.7	35	14		2,5,SWF
	410	SGMR	6 S	2102.4	2102.9	4.6	93.7	37.5		2,5,SWF
	606	SGMR	3 S	2102.5	2103.7	4.5	278.4	111.4		2,5,SWF
	2800	OTTA	4 S/F	2102	2102.4	7	32	10.5		
	2695	BOUL	46 C	2102	2104	13.5	27	9		
	18	HCMA	41 F	2102	2107	14			2	
	2800	OTTA	1 S	2111	2113.2	4.5	5.8	2.9		
	2695	BOUL	29 PBI	2116	2119.5	5	3	1		
	200	HIRA	46 C	2118	2119	4	180	70		WL
	100	HIRA	46 C	2118.5	2119	2	130	70		WR
	2800	OTTA	20 GRF	2210	2225	60	2.8	1.4		
	2695	PENT	20 GRF	2336	2340	24	3.4	1.7		
2	200	HIRA	43 NS	0025	0050	565 D	40	10		SR
	200	GORK	43 NS	0303		597		5		
	260	ONDR	44 NS	0624 E		524 D	219	9		
	100	GORK	43 NS	0806 U		294		5		
	127	TORN	44 NS	0830 E	1202.5	390 D	37	4		V1
	245	SGMR	44 NS	0912 E	1212.9	898 D	118			3
	410	SGMR	44 NS	0912 E	2306.5	898 D	56.7			3
	200	HIRA	44 NS	2345 E	0510	605 D	20	5		MR
	930	BORD	8 S	0847.8	0847.8	.1	13	1		
	234	POTS	2 S/F	0848.1	0849.2	2	1600	15		
	237	TRST	41 F	0848.2	0848.3	.3	1140			5R
	202	IZMI	41 F	0848.3	0849.5	1.7	1800			
	237	TRST	41 F	0849.2	0849.4	.6	2250			0
	33	UPIC	45 C	0849.3	0849.7	1.2				
	29	UPIC	4 S/F	0849.4	0850	.8				
	234	POTS	48 C	0954.5	0954.6	4.8	160	1		
	113	POTS	48 C	0954.6	0954.9	4.9	315	3		
	237	TRST	41 F	0954.6	0954.7	1.2	285			0
	202	IZMI	41 F	0954.6	0955.7	1.5	140			
	234	POTS	48 C	1103.2	1108.4	5.7	1150	10		

SOLAR RADIO EMISSION
OUTSTANDING OCCURRENCES

JUNE 1978

JUN 1978	FREQUENCY	STATION	TYPE		STARTING TIME UT	TIME OF MAXIMUM UT	DURATION MINUTES	FLUX DENSITY 10^{-22} Wm^{-2} Hz^{-1} PEAK	FLUX DENSITY 10^{-22} Wm^{-2} Hz^{-1} MEAN	INT	POLARIZATION OR REMARKS
	113	POTS	48	C	1103.8	1108.7	5.1	7000	45		
	237	TRST	41	F	1103.8	1104.1	.7	490			3L
	245	SGMR	7	S	1104	1104.2	1.1	373	149		3G
	33	UPIC	4	S/F	1104.1	1104.2	1.4				
	29	UPIC	4	S/F	1104.2	1104.4	1.2				
	408	TRST	8	S	1108.5	1108.6	.1	16			
	237	TRST	41	F	1108.5	1108.5	.2	1450			0
	200	GORK	27	RF	1145	1154	15	23	10		
	2800	OTTA	20	GRF	1425	1500	60	2.2	1.7		
	2800	OTTA	20	GRF	1620	1915	280	5.6	2.8		
	930	BORD	41	F	1704.6	1705	.6	42	2		
	9400	HUAN	20	GRF	1820.7	1827.1	6.4	6.7			0
3	100	GORK	44	NS	0254 E		297		5		
	200	GORK	44	NS	0254 E		426		5		
	260	ONDR	44	NS	0516 E		547 D	104	5		
	127	TORN	44	NS	0630 E	0939.1	500 D	51	1.5		V0
	410	SGMR	44	NS	0912 E	1308.1	899 D	36.2			3G
	245	SGMR	44	NS	0912 E	1308	899 D	67.5			3G
	6100	KISV	1	S	0720	0720.3	2	2			
	930	BORD	8	S	1018	1018.1	.2	21	1		
	9100	ARCE	22	GRF	1045.5	1051.4	12.8				
	113	POTS	45	C	1205.6	1205.7	.8	100	10		
	234	POTS		S	1205.7	1205.8	.3	140	50		
	237	TRST	41	F	1205.7	1205.9	.3	375			6L
	237	TRST	42	SER	1307.8	1310.3	2	165			4R
	113	POTS	45	C	1310.2	1310.3	1.5	120	20		
	930	BORD	8	S	1750.2	1750.2	.2	15	1		
	930	BORD	8	S	1752.5	1752.5	.2	18	1		
	9400	HUAN	3	S	1826.1	1828.4	2.3	14.7			0
	9400	HUAN	1	S	2104.1	2105.1	1	8.2	22		R
	2800	OTTA	1	S	2212.5	2214	2.5	2.4	1.4		
4	100	GORK	44	NS	0257 E		135		5		
	200	GORK	44	NS	0300 E		414		5		
	260	ONDR	44	NS	0510 E		610 D	94	3		
	410	SGMR	44	NS	0912 E	1214.3	900 D	93.1			3,5
	245	SGMR	44	NS	0912 E	1212.9	900 D	283			3,5
	127	TORN	43	NS	1050	1147.2	190 U	30	1		V1
	1470	BERL	3	S	1130	1139.5	20	3.9			
	408	TRST	42	SER	1211.7	1214.2	2.7	100			
	113	POTS	45	C	1211.9	1212.8	1.9	125	25		
	234	POTS	2	S/F	1211.9	1212.5	3.5	315	20		
	237	TRST	41	F	1212.1	1212.6	1.5	760			0
	33	UPIC	45	C	1212.6	1213.1	2.3				
	29	UPIC	45	C	1213	1213.6	2.3				
	1470	BERL	3	S	1336.5	1336.7	2	5.9			
	536	ONDR	8	S	1347.2	1347.2	.3	75			
	930	BORD	8	S	1348.4	1348.4	.1	15	1		
	237	TRST	41	F	1349	1349.1	.7	755			4R
	33	UPIC	4	S/F	1349.1	1349.3	.9				
	234	POTS	45	C	1349.1	1349.2	1.3	385	70		
	113	POTS	45	C	1349.1	1349.2	1.5	770	70		
	245	SGMR	7	S	1349.1	1349.3	1.7	390	117		5
	29	UPIC	4	S/F	1349.2	1349.6	.7				
	234	POTS		S	1412.4	1412.5	.7	160	50		
	113	POTS	45	C	1412.5	1412.9	.7	385	100		
	237	TRST	41	F	1412.7	1412.7	.3	210			6L
	237	TRST	41	F	1440.2	1440.5	.7	315			2L
	234	POTS	45	C	1440.4	1440.5	.9	210	20		
	113	POTS	45	C	1440.4	1440.6	1	350	60		
5	6100	KISV	3	S	0410	0415	10	8			
	6100	KISV	20	GRF	0520	0540	45	5			
	260	CNDR	44	NS	0530 E		514 D	37			
	245	SGMR	44	NS	0911 E	2303.8	901 D	456.5			3,5
	410	SGMR	44	NS	0911 E	1905.1	901 D	129			3,5
	200	HRA	43	NS	2125	0020	740 D	30	5		MR
	6100	KISV	21	GRF	0727	0742	48	14			
	3000	BERL	20	GRF	0727	0742	42	5.8			
	9500	BERL	20	GRF	0728	0742	30	11			
	3100	CRIM	20	GRF	0729	0743	103	4	1		
	536	ONDR	41	F	0940.8	0943.1	3	17			
	6100	KISV	21	GRF	0954	0956	10	1			
	2800	OTTA	22	GRF	1240	1325	110	3.4	1.7		
	7000	SAOP	22	GRF	1257			9			
	6100	KISV	21	GRF	1300	1306	43	10			
	9500	BERL	20	GRF	1304	1340.5	116	13			
	3000	BERL	20	GRF	1304	1305.4	51	4.1			
6	200	GORK	43	NS	0300		330		5		
	260	ONDR	44	NS	0522 E		528 D	44	4		
	127	TORN	44	NS	0720 E	0843.8	120 U	210	4		V2
	245	SGMR	44	NS	0911 E	1104.1	902 D	12.8			3
	234	POTS	48	C	0711.7	0711.8	11	160	1		

SOLAR RADIO EMISSION
OUTSTANDING OCCURRENCES

JUNE 1978

JUN 1978	FREQUENCY	STATION	TYPE	STARTING TIME UT	TIME OF MAXIMUM UT	DURATION MINUTES	FLUX DENSITY 10^{-22} Wm^{-2} Hz^{-1} PEAK	FLUX DENSITY MEAN	INT	POLARIZATION OR REMARKS
	3100	CRIM	24 R	0816	1205		4			
	930	BORD	8 S	0952.2	0952.2	.2	15	2		
	930	BORD	41 F	1532	1532.8	1	18	2		
7	536	ONDR	8 S	1054.2	1054.2	.3	91			
	245	SGMR	43 NS	1345	1724.8	629 D	34			5
	2800	OTTA	1 S	1851	1852	2	1	.5		
8	245	SGMR	44 NS	0910 E	1018.6	565.4D	42			
	9100	ARCE	1 S	1426.2	1426.3	1				
	9100	ARCE	2 S/F	1736.7	1736.9	1				
	2800	OTTA	20 GRF	1820	2005	170	2	1		
9	245	SGMR	44 NS	0910 E	1803.6	905 D	48			
	536	ONDR	8 S	1100	1100	.3	45			
	245	SGMR	6 S	1241.2	1242.5	2.1	90.7	36.3		3G
	33	UPIC	4 S/F	1241.4	1241.4	1.8				
	113	POTS	45 C	1241.9	1242	1.3	850	40		
	234	POTS	45 C	1241.9	1242.2	1.6	100	5		
	29	UPIC	4 S/F	1242.2	1242.6	1.2				
	260	ONDR	4 S/F	1242	1242.7	2	78	22		
	9100	ARCE	1 S	1536.3	1536.4	.7				
	9400	HUAN	1 S	2156.4	2158.5	2.1	10			0
10	3100	CRIM	20 GRF	0718	0756	100	1.5	.5		
	3100	CRIM	20 GRF	0905	0918	90	2	1		
	245	SGMR	44 NS	0910 E	2034.1	710 D	14			
11	260	ONDR	45 C	1027.6	1028.6	1.5	20	17		
12	2800	OTTA	20 GRF	1240	1317	85	3.2	1.6		
	7000	SAOP	22 GRF	1636	1641		15.7	17		
	4995	SGMR	3 S	1636.2	1641	5.8	13.5	5.4		SWF
	2695	SGMR	1 S	1636.5	1637.7	5.8	7.5	3		SWF
	2800	OTTA	2 S/F	1636	1637.7	6	8	2.7		
	930	BORD	8 S	1641.6	1641.8	.2	16	1		
	2800	OTTA	29 PBI	1642	1642	60	2.8	1.4		
	2800	OTTA	21 GRF	2030	2125	110	2.6	1.4		
	2800	OTTA	1 S	2120	2120.8	2	2	.8		
	2695	PENT	240 R	2350	2500	70	3.6	2		
13	9100	GORK	2 SF	0928.7	0929.6	6.6	9.4	3.5		
	2800	OTTA	27 RF	1218		152	1.2	1.1		
	2800	OTTA	24 R	1218	1230	12	1.2	.6		
	2800	OTTA	24P R	1230		128	1.2			
	930	BORD	41 F	1438.8	1438.8	.3	16	1		
	2800	OTTA	26 FAL	1438	1450	12	-1.2	-.6		
	2800	OTTA	20 GRF	1454	1605	95	1.6	.8		
	2800	OTTA	20 GRF	1640	1645	25	1	.5		
	2800	OTTA	8 S	1717.8	1718	.4	1.6			
	930	BORD	41 F	1718	1718.2	.3	61	2		
	7000	SAOP	2 S/F	1738.4	1739.9		8			
	9400	HUAN	1 S	1739.4	1740.8	1.4	8.8			0
	930	BORD	41 F	1739	1739.7	1.4	16	2		
	2800	OTTA	23 GRF	1900	2035	170	3.8	1.9		
	2800	OTTA	1 S	1908.5	1909.1	1.5	.8	.4		
	1420	BOUL	4 SF	1918.5	1920	3.5	29	10		
	2800	OTTA	40 F	1918.8	1919.5	3	1.4			
	2695	BOUL	4 SF	1919	1920.5	3	12	4		
	15400	SGMR	3 S	2122.3	2123.2	1.7	35.5	14.2		SWF
	8800	SGMR	3 S	2122.5	2122.7	1	18.6	7.4		SWF
	9400	HUAN	3 S	2122.6	2124.1	1.5	15.9			0
	2695	SGMR	3 S	2122.7	2123.1	1.3	25.5	10.2		SWF
	2800	OTTA	4 S/F	2122.8	2123	1.2	22	6		
	4995	SGMR	3 S	2122.8	2123	1.2	23.6	9.4		SWF
	1420	BOUL	45 C	2122	2122.5	3	26	9		
	4995	BOUL	8 S	2122	2122.5	1	18	6		
	1415	SGMR	3 S	2123	2123.3	3	234	23.4		SWF
	410	SGMR	6 S	2123.2	2123.3	.5	77	7.7		SWF
	2695	BOUL	8 S	2123.5	2124	1.5	18	6		
14	2695	PENT	1 S	0846.2	0846.9	1	2.6	1.3		
	1420	BOUL	45 C	0128	0128.5	2.5	22	7		
	2695	PENT	2 S/F	0129	0129.8	1.2	4			
	2695	BOUL	1 S	0130	0131	1	4	1		
	1400	SYDN	40 F	0142.8	0143.7	1.3	23			
	700	SYDN	8 S	0143.6	0143.8	.4	25			
	6100	KISV	45 C	0440	0440.4	4	7			
	15000	KISV	21 GRF	0440	0440.4	2	9			
	6100	KISV	45 C	0557	0600	8	10			
	15000	KISV	1 S	0559	0559	2	15			
	8900	BERN	2	0559.2	0559.9	3	8	21		0
	8400	BERN	2 S/F	0559.2	0559.9	3	7	18		0
	3100	CRIM	1 S	0559.5	0600	2	6	2		
	9100	GORK	1 S	0559.7	0600.1	1.4	16.6	8		

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JUN 1978	FREQUENCY	STATION	TYPE		STARTING TIME UT	TIME OF MAXIMUM UT	DURATION MINUTES	FLUX DENSITY 10^{-22} Wm^{-2} Hz^{-1} PEAK	FLUX DENSITY 10^{-22} Wm^{-2} Hz^{-1} MEAN	INT	POLARIZATION OR REMARKS
	3100	CRIM	21	GRF	0633	0646	21	2	1		
	6100	KISV	45	C	0642	0646	6	7			
	15000	KISV	45	C	0642.3	0646	5	10			
	8900	BERN	2		0644.2	0645.9	1.5	6	15		0
	8400	BERN	2	S/F	0644.2	0645.9	1.5	6	15		0
	3100	CRIM	1	S	0645.5	0646	1	2	.5		
	650	GORK	1	S	0649.8	0650.2	1	18	9		
	15000	KISV	8	S	0830	0830.3	1	12			
	6100	KISV	1	S	0842	0844	4	4			
	1470	BERL	4	S/F	0843.8	0844.5	1.2	8.5			
	930	BORD	41	F	0843	0844	2	80	2		
	3000	BERL	1	S	0844	0844.1	1	3.4			
	9500	BERL	1	S	0844	0844.6	1	7.9			
	3100	CRIM	1	S	0844	0845	5	4	1		
	15000	KISV	8	S	0851	0852	1	17			
	6100	KISV	8	S	0904	0909.1	6	13			
	8900	BERN	45		0908.2	0909.4	1.5	10	28		0
	8400	BERN	45	C	0908.2	0909.4	1.5	10	27		0
	10400	BERN	45		0908.2	0909.4	1.5	13	38		
	536	ONDR	4	S/F	0908.3	0909	1.5	49			
	8800	ATHN	3	S	0909	0909.6	7.2	30.1	9		
	9500	BERL	4	S/F	0909	0909.5	1	25			
	1470	BERL	4	S/F	0909	0909.4	1	17			
	3000	BERL	4	S/F	0909	0909.4	1	12			
	950	GORK	1	S	0909	0909.4	1.2	18	9		
	15000	KISV	45	C	0909	0909.1	1	30			
	3100	CRIM	1	S	0909	0909.5	1	9	3		
	3100	CRIM	29	PBI	0909	0953		4			
	9100	GORK	2	SF	0909.2	0909.6	.9	26	13		
	4995	ATHN	3	S	0909.2	0909.4	2.8	13.8	4.1		
	1415	ATHN	3	S	0909.2	0909.6	1.3	19.1	11.4		
	2695	ATHN	3	S	0909.2	0909.4	1.8	11.7	7		
	2950	GORK	3	S	0909.3	0909.4	1	16	8		
	650	GORK	3	S	0909.3	0909.5	65	32			
	10715	DWIN	2	S	0909		1	40	10		
	2650	DWIN	2	S	0909		1	15	5		
	930	BORD	41	F	0909	0909	.8	44	3		
	808	ONDR	2	S/F	0909	0909.6	1	52			
	808	ONDR	3	S	0936.2	0936.2	.2	50			
	930	BORD	8	S	0936.2	0936.2	.1	72	1		
	536	ONDR	1	S	0936.3	0936.3	.2	8			
	2800	OTTA	21	GRF	1100	1220	150	3.4	1.6		
	930	BORD	41	F	1235.4	1235.4	.2	61	2		
	2800	OTTA	8	S	1235.5	1235.6	.5	1.8	.6		
	930	BORD	8	S	1340	1340	.1	16	1		
	2800	OTTA	20	GRF	1405	1415	25	1.8	.9		
	2800	OTTA	24	R	1500	1550	50	2.2	1.1		
	2800	OTTA	27A	RF	1500		180	2.2	1.8		
	1420	BOUL	4	SF	1542	1542.5	3	5	2		
	2695	BOUL	1	S	1543.5	1544	.5	2	1		
	2800	OTTA	24P	R	1550		110	2.2			
	9400	HUAN	3	S	1601	1603.1	2.1	10.9			C
	930	BORD	46	C	1601.2	1601.5	3.8	118	5		
	2800	OTTA	40	F	1601.2	1602.1	2	8			
	1420	BOUL	45	C	1601	1602	2	17	6		
	2695	BOUL	2	SF	1602.5	1603	1.5	9	3		
	7000	SADP	3	S	1618.2	1620.2		17.8			
	930	BORD	46	C	1618.4	1620.2	4.6	205	5		
	8400	BERN	1	S	1619.9	1620.3	3	6	15		0
	10400	BERN	1		1619.9	1620.3	3	10	31		
	8900	BERN	1		1619.9	1620.3	3	8	20		0
	1420	BOUL	4	SF	1619	1620	1.5	19	6		
	606	SGMR	1	S	1620	1620.4	.8	9.5	2.9		
	1415	SGMR	3	S	1620	1620.4	1	33.6	10.1		
	4995	SGMR	3	S	1620	1620.4	1	18.9	4.3		
	9400	HUAN	3	S	1620	1621.7	1.7	24.9			0
	2695	SGMR	3	S	1620.2	1620.5	.8	37.7	11.3		
	8800	SGMR	3	S	1620.2	1620.6	1.7	21.8	6.6		
	15400	SGMR	3	S	1620.3	1620.5	.7	37.2	11.2		
	2800	OTTA	3	S	1620	1620.3	2	15	3.4		
	2650	DWIN	2	S	1620		1	20	5		
	10715	DWIN	2	S	1620		1	30	10		
	2695	BOUL	8	S	1621	1621.5	1.5	14	5		
	930	BORD	41	F	1638.7	1639.4	2.4	76	4		
	2800	OTTA	8	S	1639	1639.1	.5	4.4	2.6		
	930	BORD			1704	1713.6		20			
	930	BORD	42	SER	1704	1704.8	32	182	2		
	930	BORD			1704	1734		40			
	930	BORD			1704	1730.9		10			
	930	BORD			1704	1722.8		266			
	10400	BERN	40	F	1719.8	1720.9	4	4	12		
	2800	OTTA	40	F	1720.8	1723	3.5	3.8			
	1420	BOUL	45	C	1720	1720.5	6	16	5		
	2695	BOUL	40	F	1721.5	1722	2.5	3	1		
	9400	HUAN	3	S	1733.5	1734.8	1.3	10.9			0

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	10680	BERN	2 S/F	1733.5	1734.1	2	6	18		
	1420	BOUL	45 C	1733	1733.5	2	14	5		
	2695	BOUL	4 SF	1734.5	1735	2	13	4		
	2800	OTTA	3 S	1734	1734	2.2	16.6	4.2		
	2800	OTTA	26 FAL	1740	1800	20	-2.2	-1.1		
	930	BORD	8 S	1802.8	1802.8	.1	13	1		
	2800	OTTA	240 R	1920	2010	50	3.2	1.6		
	2800	OTTA	1 S	2132.5	2132.9	1	2.2			
	2800	OTTA	1 S	2220.2	2220.5	1	4	2		
	2695	PENT	21 GRF	2235	2315	115	3.4	2		
	2695	PENT	1 S	2403	2403.2	1	3.2	1.4		
	2695	PENT	1 S	2407.9	2408	2	7	2.4		
15	606	ONDR	3 S	0731.4	0731.4	.2	41			
	245	SGMR	43 NS	1745	1825.1	355.8D	39			
	410	SGMR	43 NS	1822.2	2020.7	393 D	26.3			
	2800	OTTA	240 R	1955	2020	25	2.2	1.1		
	2800	OTTA	1 S	2049.9	2050	1.5	6.6	2.2		
	4995	BOUL	8 S	2049	2049.5	1.5	18	6		
	2695	BOUL	2 SF	2050.5	2051	1	7	2		
16	1420	BOUL	8 S	0007	0007.5	1	19	6		
	2695	BOUL	8 S	0008.5	0009	1	8	3		
	6100	KISV	21 GRF	0838	0841.3	11	6			
	245	SGMR	44 NS	0910 E	1853.5	908 D	3.4			
	1470	BERL	3 S	1015	1015.3	.5	15			
	260	ONDR	4 S/F	1039.6	1040.8	2.5	25	16		
	2800	OTTA	240 R	1230	1255	25	1.8	.9		
	2800	OTTA	22 GRF	1630	1740	215	2.4	1.6		
	9400	HUAN	20 GRF	1824.7	1842.3	17.6	8.6			0
	2800	OTTA	240 R	1955	2020	25	1.8	.9		
	2800	OTTA	240AR	2210	2250	40	5.8	3.2		
	1420	BOUL	45 C	2233.5	2234	7.5	6	2		
	2800	OTTA	1 S	2239.2	2235.8	3	2.2	1.1		
	2695	BOUL	2 SF	2236	2237	1	4	1		
	2695	PENT	20 GRF	2320	2355	100	3.4	1.7		
17	9400	HUAN	21 GRF	1355.4	1404.8	9.4	7.9			0
	9400	HUAN	1 S	1359.3	1400.2	.9	9.5	35.8		L
	2800	OTTA	240 R	1415	1550	35	4.6	2.3		
	245	SGMR	43 NS	1430	1645.5	589 D	13			
	2800	OTTA	240 R	1820	1840	20	3.4	1.7		
	2800	OTTA	20 GRF	1900	1910	10	1.8	.9		
	2800	OTTA	20 GRF	2015	2025	25	1.8	.9		
	2800	OTTA	1 S	2054	2054.5	2	1.2	.5		
	2800	OTTA	1 S	2108	2108.5	3	1.8	.9		
	2800	OTTA	20 GRF	2120	2140	90	2.2	1.4		
	245	SGMR	6 S	2222	2222.9	1.3	234	93.6		
	410	SGMR	6 S	2222.7	2222.9	.3	29.6	11.8		
	606	SGMR	3 S	2222.8	2222.9	.2	29.8	11.9		
18	2695	PENT	21 GRF	0008	0045	100 D	7.8			
	2695	PENT	1 S	0009	0010.8	5	6.2	3		
	2695	PENT	1 S	0118	0119	3	3.2	1.6		
	3100	CRIM	22 GRF	0719	0739	55	5	2		
	234	POTS	45 C	0957.2	0958.1	2	5000	1500		
	29	UPIC	2 S/F	1025.8	1026.2	1.4				
	33	UPIC	2 S/F	1025.9	1026.2	1.2				
	930	BORD	8 S	1210	1210	.1	174	1		
	2800	OTTA	20 GRF	1300		90	2.2			
	245	SGMR	43 NS	1400	1637.1	560	47.8			3G
	2800	OTTA	23 GRF	1515	1700	170	2.8	1.8		
	2695	PENT	1 S	1706	1707	2	2	1		
	2800	OTTA	240 R	2020	2035	15	1.8	.9		
	1420	BOUL	1 S	2146.5	2148	1.5D	3	1		
	2800	OTTA	1 S	2147	2148	4	2.6	1.3		
	2695	BOUL	2 SF	2148 E	2148.5	1.5D	4	1		
19	4995	BOUL	2 SF	0009.5	0010	2.5	9	3		
	2695	BOUL	2 SF	0010.5	0011.5	2 D	6	2		
	3100	CRIM	24 R	0707	1231		13			
	536	ONDR	3 S	0946.8	0946.8	.2	22			
	260	ONDR	41 F	1024.6	1027.4	4	15			
	536	ONDR	3 S	1108.8	1108.8	.2	22			
	7000	SAOP	1 S	1224	1225.8		6			
	2800	OTTA	21 GRF	1300	1410	130	2.8	1.4		
	6100	KISV	4 S/F	1324.3	1325.3	7	8			
	2800	OTTA	1 S	1324	1325.5	4	2.2	1.4		
	930	BORD	41 F	1423.4	1423.5	.2	18	2		
	33	UPIC	2 S/F	1510.3	1510.5	1.3				
	29	UPIC	2 S/F	1510.5	1510.9	1.7				
	2800	OTTA	24 R	1540	1550	10	2.2	1.1		
	2800	OTTA	27A RF	1540		230	2.2	2		
	2800	OTTA	24P R	1550		200	2.2			

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	2800	OTTA	1 S	1815	1816	3	2.6	1		
	2800	OTTA	26 FAL	1910	1930	20	-2.2	-1.1		
	9400	HUAN	1 S	1914.1	1915.3	1.2	8.4	21.9		R
	2695	PENT	21 GRF	2215	2350	165	4	2		
	2695	PENT	3 S	2336	2337.6	2.5	13	6		
	4995	BOUL	2 SF	2336	2337	1.5	10	3		
	2695	MANI	3 S	2345	2347.6	3.3	17.6	5.9		
	4995	MANI	1 S	2345.5	2347.7	3.3	8.7	3.5		
	1415	MANI	1 S	2346	2347.6	2.5	8.5	3.2		
20	930	BORD	8 S	0656.6	0656.7	.4	29	2		
	9100	GORK	1 S	0808.7	0808.8	.4	7.3	3.5		
	1470	BERL	3 S	0810.5	0810.8	.5	6.?			
	3000	BERL	3 S	0810.5	0810.8	.8	7.3			
	1415	MANI	2 S/F	0811	0811.3	.8	13.4	6.7		
	3100	CRIM	1 S	0811	0811.5	1	5	2		
	2695	MANI	2 S/F	0811.2	0811.3	.8	11.1	5.6		
	950	GORK	1 S	0811.5	0811.6	.4	19	8		
	650	GORK	1 S	0811.5	0811.5	.4	8	4		
	2950	GORK	1 S	0811.6	0811.6	.6	8.6	4.3		
	930	BORD	41 F	0811	0811.3	.6	78	4		
	808	ONDR	3 S	0811	0811	.2	48			
	410	SGMR	44 NS	0910 E	2001.8	909 D	10.7			SWF
	245	SGMR	44 NS	0910 E	1907.4	909 D	97.5			SWF
	650	GORK		0922	0924.4		13			
	650	GORK	45 C	0922	0923	4	72			
	9500	BERL	20 GRF	1152	1221	36	7.4			
	2800	OTTA	20 GRF	1310	1333	120	1.4	.7		
	2800	OTTA	21 GRF	1705	1723	315	6.4	3.2		
	2800	OTTA	2 S/F	1724.5	1725	2.5	7.6	3.8		
	9400	HUAN	22 GRF	1911.2	1933.4	22.2	25.5	23.7		L
21	1415	MANI	1 S	0041.5	0041.7	.6	2.2	1.1		
	2695	MANI	3 S	0041.5	0041.8	1.1	13.1	4.4		
	4995	MANI	3 S	0041.6	0041.8	1.7	15.7	4.7		
	2695	PENT	3 S	0041	0041.8	2	13.4	3.6		
	202	IZMI	4 S/F	0538.1	0538.7	.6	260	75		
	260	ONDR	44 NS	0553 E		574 D	62			
	410	SGMR	44 NS	0910 E	1131.4	910 D	32.2			
	245	SGMR	44 NS	0910 E	2030.1	910 D	176			
	3100	CRIM	24 R	0745	0843		10			
	234	POTS	S	0746.9	0747	.2	175	60		
	237	TRST	5 S	0747.6	0747.7	.1	605	200		12L
	408	TRST	8 S	1020.6	1020.7	.1	90			
	2800	OTTA	20 GRF	1120		100	3.2	2		
	2800	OTTA	20 GRF	1340	1425	75	2.2	1.8		
	2800	OTTA	21 GRF	1515	1623	190	6.2	3.1		
	8800	SGMR	3 S	1534.2	1536.6	3.3	20.5	8.2		
	8900	BERN	46	1534.2	1534.5	6	10	28		-21
	8400	BERN	46 C	1534.2	1534.5	6	12	31		-20
	10400	BERN	46	1534.2	1534.5	6	11	31		
	2695	SGMR	1 S	1534.4	1535.5	3.2	3.7	1.5		
	4995	BOUL	45 C	1534.5	1536	2.5	26	9		
	4995	SGMR	3 S	1534.5	1535.6	3.1	14.9	6		
	4995	ATHN	3 S	1534.5	1535.7	8.3	29	8.7		
	8800	ATHN	3 S	1534.5	1535.7	8.2	49.8	15		
	15400	SGMR	3 S	1534.9	1536.5	2.9	21.8	8.7		
	9400	HUAN	4 S/F	1535.1	1538.4	3.3	29	37.7		L
	2800	OTTA	2 S/F	1535	1536.5	3	3.2	1.8		
	245	SGMR	6 S	1725.5	1729.8	6.7	148	59		
	2800	OTTA	20 GRF	1830	1904	90	3	1.4		
	2800	OTTA	240 R	2110	2140	30	4.6	2.6		
22	4995	BOUL	8 S	0041	0041.5	1	25	8		
	8400	BERN	20 GRF	0458	0611.3	150	6	15		0
	10400	BERN	20	0458	0611.3	150	7	22		
	8900	BERN	20	0458	0611.3	150	4	11		0
	260	ONDR	44 NS	0524 E		588 D	44			
	245	SGMR	44 NS	0910 E	2039.1	910 D	298			3,5,CONT
	410	SGMR	44 NS	0910 E	2126.9	910 D	29.6			3,5,CONT
	200	HIRA	44 NS	1925 E	2125	875 D	45	5		ML
	3100	CRIM	1 S	0602	0605	4	13	4		
	3100	CRIM	29 PBI	0606	0718	72	6	2		
	650	GORK	4 SF	0716.2	0717.2	2	30	7.5		
	9100	GORK	1 S	0942	0942.3	.6	9.4	4.5		
	408	TRST	42 SER	1021.6	1022	.5	15			
	237	TRST	41 F	1022.6	1022.8	.3	180			14L
	9100	GORK	1 S	1024.1	1024.3	.6	11	5.5		
	408	TRST	2 F/S	1121.1	1121.2	.1	29			
	237	TRST	41 F	1340.4	1340.7	.6	205			9L
	113	POTS	45 C	1340.4	1340.9	1	200	50		
	234	POTS	45 C	1340.4	1340.5	1.5	100	25		
	9500	BERL	1 S	1430.7	1431.9	1.7	7.1			
	3000	BERL	3 S	1430.9	1431.5	2.1	8.4			
	1470	BERL	S	1431	1431.8	2	4.6			

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	2800	OTTA	1 S	1431.5	1432	2	7.4	2.4		
	930	BORD	41 F	1558	1558.6	1	32	2		
	2650	OWIN	47 GB	1640		140 D	130			
	2695	SGMR	3 S	1641	1706.3	95	129	51.6		4,SWF
	606	SGMR	46 C	1641	1811		164			4,SWF
	245	SGMR	49 GB	1641	1757.9		407			4,SWF
	606	SGMR	46 C	1641	1729.8		224			4,SWF
	245	SGMR	49 GB	1641	1706.5	98	824	330		4,SWF
	410	SGMR	6 S	1641	1707.3	98	183	73.2		4,SWF
	606	SGMR	46 C	1641	1707.5	96	205	89.6		4,SWF
	1415	SGMR	4 S/F	1641	1703.4	96	474	180		4,SWF
	4995	SGMR	20 GRF	1642	1706.1	94	68.4	27.4		4,SWF
	1420	ARCE	28 PRE	1642.3	1651.3	13				SUNSET
	237	TRST	47 GB	1643	1706.2	80	1150			32L
	1420	BOUL	48 C	1643.5E	1704	67.5D	388	129		
	930	BORD	46 C	1643	1729.6	130	350	37		
	2695	ATHN	20 GRF	1644.8	1727.5	56.2	138.2	41.4		
	2800	OTTA	45 C	1644	1706	90	113	56		
	228	HARS	47 GB	1645	1705 U	85	700	100		
	1415	ATHN	45 C	1648.3	1704.2	52.7	408	122.4		
	1415	ATHN	45 C	1648.3	1724.6		190	57		
	10400	BERN	22	1651.2	1741.8	85	19	54		
	8900	BERN	22	1651.2	1741.8	85	12	33		0
	8400	BERN	22 GRF	1651.2	1741.8	85	12	32		0
	8300	SGMR	20 GRF	1652	1709	83	38.4	15.4		4,SWF
	2695	BOUL	20 GRF	1652.5E	1703.5	80 D	117	39		
	9400	HUAN	21 GRF	1653.4	1915	141.6	64.6	16.5		R
	1420	ARCE	4 S/F	1655.3	1703.9	15				
	15400	SGMR	20 GRF	1656	1747	79	56.9	17.1		4,SWF
	4995	ATHN	20 GRF	1656.2	1727.5	44.8	99	59.4		
	8800	ATHN	20 GRF	1657.5	1726.1	43.5	62.3	37.4		
	18	HOMA	41 F	1657	1719	57			3	
	9400	HUAN	1 S	1705.2	1706.6	1.4	9.9			0
	29	UPIC	46 C	1707.1	1711.8	10.5				
	33	UPIC	46 C	1710 U	1714.4	7.6U				
	2800	OTTA	30 PBI	1814	1814	265	39	18.2		
	410	SGMR	6 S	1855	1900.9	25	15.2	6.1		
	9400	HUAN	1 S	1902.6	1904.2	1.6	9.9			0
	606	SGMR	47 GB	1905.4	1907.1	14.6	584	234		
	9400	HUAN	21 GRF	1945.9	2101.7	75.8	26.5			0
	4995	SGMR	3 S	1946.4	1951	14.6	31.6	12.7		SWF
	2695	SGMR	3 S	1947	1950.6	14	11.1	4.4		SWF
	9400	HUAN	4 S/F	1948.6	1952.2	3.6	19.9	44.7		L
	8800	SGMR	3 S	1948.8	1952.8	12.2	18.3	7.3		SWF
	2800	OTTA	1 S	1949	1951	8	6.4	3.1		
	4995	BOUL	2 SF	1949	1950.5	2.5D	24	8		
	2800	OTTA	1 S	2010	2014	10	3.6	1.8		
23	202	IZMI	44 NS	0500		195	40			
	260	ONDR	44 NS	0522 E		592 D	96	9		
	127	TORN	44 NS	0640 E		300 D				VO
	245	SGMR	44 NS	0911 E	1405.6	909 D	241			
	410	SGMR	44 NS	0911 E	1548.4	909 D	28.8			
	1420	ARCE	25 R	0725.3		45				
	8400	BERN	20 GRF	0726	0755.6	100	5	15		0
	10400	BERN	20	0726	0755.6	100	7	20		
	8900	BERN	20	0726	0755.6	100	7	20		0
	1420	ARCE	4 S/F	0739.8	0744.5	7.5				
	2695	ATHN	20 GRF	0740.4	0745	29.9	15.8	9.5		
	4995	ATHN	20 GRF	0740.9	0745.7	28.5	14.1	8.5		
	2650	OWIN	1 S	0740	0745	7	20	15		
	9500	BERL	20 GRF	0740	0751	95	15			
	1470	BERL	3 S	0740	0744.4	125	20			
	3000	BERL	20 GRF	0740	0743.4	99	25			
	3100	CRIM	22 GRF	0741	0814	259 D	15	5		
	8800	ATHN	20 GRF	0741.2	0748.6	27.2	18.4	11		
	1415	MANI	3 S	0742	0744.9	4.2	11.2	4.1		
	930	BORD	46 C	0742	0742.3	8	59	5		
	9100	GORK	20 GRF	0744.3	0752.5	36.2	21.5	8.5		
	2695	MANI	3 S	0744.6	0745	1.8	10.2	4.4		
	202	IZMI	41 F	0927.6	0929.7	2.3	600			
	237	TRST	41 F	0929.4	0929.5	.2	240			12L
	2800	OTTA	240 R	1150	1210	20	2.6	1.3		
	8900	BERN	3	1320.2	1322	16	11	30		
	8400	BERN	3 S	1320.2	1322	16	11	29		0
	10400	BERN	3	1320.2	1322	16	11	29		
	15400	SGMR	3 S	1320.5	1322.2	4	24.1	7.2		
	3000	BERL	3 S	1320.5	1321.8	2.3	9.1			
	8300	SGMR	3 S	1320.8	1322.1	3.2	14.5	4.3		
	2800	OTTA	21 GRF	1320	1350	40	2.2	1.1		
	4995	SGMR	3 S	1321.1	1322	2.5	14.3	4.3		
	2695	SGMR	3 S	1321.4	1322	1.5	11.2	3.4		
	9400	HUAN	3 S	1321.4	1323	1.6	19.4			0
	9500	BERL	3 S	1321	1321.5	1	15			
	2800	OTTA	1 S	1321	1322	3	5.2	1.8		

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	228	HARS	7 C	1646.5	1647 U	1	85	30		
	2800	OTTA	20 GRF	1730	1735	20	1.8	.9		
	9400	HUAN	20 GRF	1752.8	1908.2	75.4	11.3			0
	2800	OTTA	1 S	1944	1945	2.5	2.2	1		
	2800	OTTA	1 S	2024	2024.5	1	2.2	1.1		
	2800	OTTA	20 GRF	2105	2113	20	2	1		
24	100	GORK	44 NS	0500 E		240		20		
	200	GORK	43 NS	0520 E		400		5		
	260	ONDR	44 NS	0633 E		497 D	98	3		
	127	TORN	44 NS	0640 E	1100.3	510 D	120	6		V1
	245	SGMR	44 NS	0911 E	1038.8	909 D	636			3G
	410	SGMR	44 NS	0911 E	1505.8	909 E	21.5			3G
	234	POTS	45 C	0601.8	0601.9	.6	190	20		
	237	TRST	41 F	0701.4	0702.2	1	225			0
	237	TRST		0706.6	0708.3		375			4L
	237	TRST	42 SER	0706.6	0706.8	2.4	295			11L
	3100	CRIM	1 S	0810	0821	21	6	2		
	3100	CRIM	24 R	0852	0915		6			
	234	POTS	2 SF	1036.3	1038.4	6.1	420	10		
	237	TRST		1037.5	1038.9		310			0
	237	TRST	42 SER	1037.5	1038.6	4.5	910			0
	234	POTS	S	1218	1218.1	.1	350	120		
	237	TRST	41 F	1218.1	1218.2	.2	625			0
	237	TRST	41 F	1505.6	1505.6	.1	705			5L
	237	TRST	41 F	1506	1506	.2	680			4L
	2800	OTTA	22 GRF	1525	1615	120	3.8	1.9		
	2800	OTTA	20 GRF	1730	1740	30	1.2	.8		
	2800	OTTA	240 R	2227	2240	13	3.6	2		
25	208	GORK	43 NS	0300		315		10		
	100	GORK	44 NS	0300 E		300		40		
	260	ONDR	44 NS	0628 E		508 D	30	2		
	245	SGMR	44 NS	0911 E	1236.8	909 D	127.4			
	410	SGMR	44 NS	0911 E	1857.6	909 D	26.2			
	29	UPIC	2 S/F	0845.1	0845.6	1.1				
	33	UPIC	2 S/F	0845.2	0845.4	.6				
	3000	BERL	1 S	1135	1136.5	2.3	5.8			
	1470	BERL	1 S	1136	1136.5	1.5	2.6			
	700	SYDN	1 S	2349.2	2349.5	.5	10			
26	200	GORK	44 NS	0303 E		570		10		
	260	ONDR	44 NS	0545 E		565 D	71	5		
	127	TORN	43 NS	0900 U	1104.4	370 D	340	6		V1
	245	SGMR	44 NS	0912 E	1759.4	908 D	715			3.5,CONT
	410	SGMR	44 NS	0912 E	1802.9	908 D	322			3.5,CONT
	100	GCRK	43 NS	1040		110		5		
	200	HIRA	44 NS	1930 E	2220	870 D	70	30		ML
	100	HIRA	44 NS	1930 E	2230	870 D	200	50		ML
	536	ONDR	4 S/F	1110.5	1111.5	3	31	2		
	234	POTS	45 C	1126.6	1126.8	1.1	250	80		
	237	TRST	41 F	1126.7	1126.9	.4	455			0
	245	SGMR	3 S	1126.8	1127	1	262	105		
	202	IZMI	5 S	1128.7	1128.8	1	750	370		
	2800	OTTA	22 GRF	1200	1230	75	5.6	2.8		
	33	UPIC	48 C	1218.5U	1221.8	8.8U				
	29	UPIC	48 C	1220.7	1222.2	9.1				
	1470	BERL	3 S	1259	1259.5	1	8.8			
	237	TRST	41 F	1304.8	1304.9	.2	100			0
	234	POTS	45 C	1429.3	1434.8	11	440	8		
	245	SGMR	6 S	1434	1436.7	8	148.5	44.6		5,SWF
	237	TRST	41 F	1434.2	1434.3	.6	880			0
	536	ONDR	41 F	1434.5	1438.6	6.5	32	3.9		
	1415	ATHN	3 S	1436	1438.5	6.1	12.2	3.7		
	33	UPIC	48 C	1436.2	1446	17.3				
	237	TRST	41 F	1436.2	1436.6	.5	430			3L
	410	SGMR	6 S	1436.3	1438.4	4.9	96.2	28.9		5,SWF
	2695	ATHN	3 S	1436.4	1438.4	6.2	16	4.8		
	8800	SGMR	3 S	1436.5	1438.8	3.4	14.1	4.2		5,SWF
	29	UPIC	48 C	1436.6	1448.4	17.6				
	4995	ATHN	3 S	1436.9	1438.4	5.4	37.5	11.3		
	8800	ATHN	3 S	1437	1438.5	5.6	12.3	3.7		
	606	SGMR	3 S	1437	1438.2	3.3	54.6	16.4		5,SWF
	2695	SGMR	3 S	1437.1	1438.3	4.1	21.3	6.4		5,SWF
	8400	BERN	2 S/F	1437.2	1438.2	3	7	19		0
	10400	BERN	2	1437.2	1438.2	3	4	13		
	8900	BERN	2	1437.2	1438.2	3	6	16		0
	1470	BERL	4 S/F	1437.5	1438	2.5	10			
	3000	BERL	3 S	1437.5	1438	2.5	25			
	9500	BERL	1 S	1437.7	1438	.8	9.6			
	1420	ARCE	4 S/F	1437.8	1438.1	2				
	2800	OTTA	3 S	1437.9	1438.1	1.8	17.2	8		
	4995	BOUL	8 S	1437	1437.5	1.5	36	12		
	9100	ARCE	1 S	1438.1	1438.6	2				
	1415	SGMR	3 S	1438.2	1438.9	2.3	45.1	13.5		5,SWF

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	930	BORD	46 C	1438	1438.5	2	15	4		
	808	ONDR	3 S	1438	1438.6	2	20	6.2		
	245	SGMR	7 C	1526.5	1618.6		186.3			2,4,5,SWF
	245	SGMR	7 C	1526.5	1537.3	108.5	251	75.3		2,4,5,SWF
	930	BORD	46 C	1527	1537	112	259	80		
	237	TRST	47 GB	1528.8	1538.3	91.5	525			24L
	237	TRST		1528.8	1643.9		340			0
	2800	OTTA	47 GB	1528	1539.5	32	1160	262		
	1420	ARCE	4 S/F	1529.5	1539.8	26.2				
	2695	BOUL	47 GB	1529 E	1541	73.5D	1730	576		
	1420	BOUL	48 C	1530.5E	1540	95.5D	388	129		
	410	SGMR	7 C	1530.5	1621		209.7			2,4,5,SWF
	410	SGMR	7 C	1530.5	1537.3	104.5	367	110		2,4,5,SWF
	1415	ATHN	2 S/F	1530.9	1540.3	76.4	412	247.2		
	2650	DWIN	47 GB	1530		60 U	160 D			
	10715	DWIN	2 S	1530	1537	25	150	75		
	4995	BOUL	20 GRF	1530 E	1543.5	65 D	281	93		
	2695	SGMR	47 GB	1531.1	1539.5	37.7	1787	536		2,4,5,SWF
	2695	ATHN	5 GB	1531.4	1543.2	74.9	521	312.6		
	4995	ATHN	2 S/F	1531.8	1543.1	79.7	404	242.4		
	606	SGMR	45 C	1532	1618.8		275			2,4,5,SWF
	606	SGMR	45 C	1532	1537.5	88	426	128		2,4,5,SWF
	10400	BERN	3	1532.1	1542.2	44	64	181		
	8900	BERN	3	1532.1	1542.2	44	69	188		-2
	8400	BERN	3 S	1532.1	1542.2	44	82	218		-3
	9180	ARCE	3 S	1533.2	1542.7	26.4				
	8800	ATHN	2 S/F	1533.2	1542.9	61.6	326	195.6		
	1415	SGMR	45 C	1534	1620.4		72.6			2,4,5,SWF
	1415	SGMR	45 C	1534	1540.2	75	380	114		2,4,5,SWF
	4995	SGMR	3 S	1534.5	1543	31.5	314	94.3		2,4,5,SWF
	15400	SGMR	3 S	1534.5	1543	29.9	109	32.6		2,4,5,SWF
	8300	SGMR	3 S	1534.5	1543	27.7	218	65.5		2,4,5,SWF
	18	MCMA	41 F	1536	1553	28			2	
	29	UPIC	46 C	1537.2	1537.8	3.3				
	33	UPIC	46 C	1537.5	1537.5	2.5				
	2695	ATHN	5 GB	1538.5	1540.1	4.7	1561	468.3		
	1420	ARCE	38 PBI	1555.7		60 D				SUNSET
	9180	ARCE	29 PBI	1559.6		97				
	2800	OTTA	38 PBI	1600	1600	230	38	14		
	1420	ARCE	4 S/F	1614.8	1620	13				
	2800	OTTA	3 S	1615	1619.5	17	22.6	10.2		
	2800	OTTA	1 S	1633	1635	6	3.8	1.9		
	2800	OTTA	1 S	1718.5	1719.2	2	2.6	1.3		
	18	MCMA	6 S	1732	1738	7			2	
	4995	BOUL	8 S	1734.5	1735	1	44	14		
	8400	BERN	2 S/F	1734.7	1735.5	3	11	30		0
	10400	BERN	2	1734.7	1735.5	3	10	26		
	8900	BERN	2	1734.7	1735.5	3	10	26		0
	2695	SGMR	3 S	1735.2	1735.7	1.8	64.2	25.7		
	1415	SGMR	3 S	1735.2	1735.9	2.8	24.9	9.9		
	4995	SGMR	3 S	1735.3	1735.7	1.7	47.9	19.2		
	245	SGMR	7 S	1735.3	1735.7	1.2	367.2	147		
	410	SGMR	6 S	1735.3	1735.9	1.7	53.3	21.3		
	29	UPIC	45 C	1735.3	1735.6	1.3				
	606	SGMR	3 S	1735.4	1735.8	2.4	22.1	8.8		
	8800	SGMR	3 S	1735.4	1735.5	2.6	18.1	7.2		
	2800	OTTA	3 S	1735	1735.7	2	43	14.4		
	2650	DWIN	8 S	1735		1	50	10		
	930	BORD	3 S	1735	1735.8	2	14	7		
	4995	BOUL	1 S	1801.5	1802	1	8	3		
	2800	OTTA	4 S/F	1802.3	1803	1.5	19	10		
	2650	DWIN	8 S	1803		1	90	10		
	4995	BOUL	45 C	2204.5	2205	2.5	51	17		
	2695	MANI	4 S/F	2204.8	2205.9	3.2	56.2	18.7		
	410	SGMR	7 S	2204.9	2205.7	12.1	445	178		
	245	SGMR	49 GB	2205	2210.1	12	669	267		
	580	HIRA	46 C	2205	2206.5	4	750	150		SR
	1400	SYDN	3 S	2205	2206	4	80			
	700	SYDN	3 S	2205	2207	3	220 D			
	1415	SGMR	3 S	2205.1	2206.3	9.9	107	42.8		
	2695	SGMR	3 S	2205.1	2205.9	9.9	55.1	22		
	4995	MANI	4 S/F	2205.2	2205.8	3.5	41.4	13.8		I
	606	SGMR	3 S	2205.2	2206	2.8	494	198.1		
	4995	SGMR	3 S	2205.5	2205.7	9.5	29.7	11.9		
	8800	SGMR	3 S	2205.5	2205.7	9.5	19.2	7.7		
	2800	OTTA	4 S/F	2205	2205.5	4	55	18.2		
	18	MCMA	6 S	2205	2208	6			1	
	200	HIRA	46 C	2205	2205.5	3	600	30		HR
	100	HIRA	46 C	2205	2206	3				
	4995	BOUL	2 SF	2238	2239	1.5	10	3		
	2800	OTTA	4 S/F	2239	2241	3	12.4	4.2		
	2695	PENT	21 GRF	2247	2325	75	3.6	1.8		
	2695	PENT	2 S/F	2315	2315.1	1	1.8			
	1400	SYDN	1 S	2340	2340.7	1	5			
	700	SYDN	4 S	2340	2341	2	22			

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	2695	PENT	1 S	2340	2340.5	1	4.4	1.4		
27	2695	PENT	21 GRF	0055	0110	30	2.8	1.4		
	200	HIRA	46 C	0059	0102	5	170	100		HR
	500	HIRA	45 C	0100	0101.1	4	70	40		SR
	1400	SYDN	4 S	0100	0101.2	4.5	47			
	700	SYDN	4 S	0100	0101.5	4.3	60			
	2695	PENT	3 S	0100.3	0101.2	6	47	12		
	2695	MANI	3 S	0100.6	0101.4	3.5	48.9	14.4		
	4995	MANI	3 S	0100.7	0101.6	2.8	14.5	4.5		IG
	4995	BOUL	4 SF	0100	0101	3	23	8		
	100	HIRA	46 C	0101 E	0101 U	3 D	4000	500		0
	700	SYDN	4 S	0111	0111.6	1.2	33			
	2695	PENT	1 S	0111	0111.9	4	3.6	1.8		
	200	GORK	44 NS	0300 E		600		5		
	260	ONDR	44 NS	0532 E		585 D	78	3		
	127	TORN	44 NS	0640 E		510 D				V0
	410	SGMR	44 NS	0912 E	1630	908 D	14.1			S,CONT
	245	SGMR	44 NS	0912 E	1235.8	908 D	67.2			S,CONT
	650	GORK	1 S	0650	0653.4	3.9	8	4		
	9100	GORK	1 S	0654.6	0654.8	.7	14	7		
	930	BORD	41 F	0700	0700.5	7	19	2		
	930	BORD	41 F	0821	0822.4	6	16	2		
	202	IZMI	4 S/F	0940.6	0941	1.1	130	45		
	3000	BERL	1 S	1001.5	1003	8.5	5.1			
	8900	BERN	1	1127.7	1128.1	5	4	10		0
	8400	BERN	1 S	1127.7	1128.1	5	5	15		0
	10400	BERN	1	1127.7	1128.1	5	4	11		
	9100	GORK	1 S	1128.1	1128.2	.5	12.2	6		
	100	GORK	8 S	1140		2	50			
	33	UPIC	45 C	1143.2	1143.6	1.4				
	29	UPIC	45 C	1143.3	1144.1	1				
	930	BORD	41 F	1143	1143.4	2	18	2		
	8400	BERN	1 S	1357.3	1358.2	6	19	50		8
	10400	BERN	1	1357.3	1358.2	6	7	22		
	8900	BERN	1	1357.3	1358.2	6	20	55		10
	9500	BERL	3 S	1357.5	1357.8	2.5	21			
	8800	ATHN	3 S	1357.9	1358.7	8.6	38	11.4		
	4995	ATHN	3 S	1358	1358.7	8.2	19	5.7		
	9400	HUAN	3 S	1358.1	1359.2	1.1	27.7			0
	536	ONDR	3 S	1412.2	1412.2	.2	24			
	536	ONDR	8 S	1511	1511	.3	60			
	10400	BERN	1	1512.4	1513.4	8	5	15		
	8900	BERN	1	1512.4	1513.4	8	7	15		0
	8400	BERN	1 S	1512.4	1513.4	8	7	15		0
	9400	HUAN	3 S	1512.7	1513.8	1.1	13	27.3		L
	245	SGMR	6 S	2159	2200.5	2.2	153	49.9		S,CONT
	1415	MANI	3 S	2257	2257.8	2.2	29.1	19.4		
28	4995	MANI	47 GB	0243.1	0245.9	10	418.3	171.9		
	4995	MANI	47 GB	0243.1	0246.3		516.2			
	500	HIRA	46 C	0244	0247.6	21	2000	150		HRWL
	1415	MANI	45 C	0244.6	0245.7	6.2	176.8	63.9		
	1415	MANI	45 C	0244.6	0246.4		191.7			
	2695	MANI	45 C	0244.8	0246.2		331.2			
	2695	MANI	45 C	0244.8	0245.7	9.9	310.5	110.4		
	5730	IRKU		0244.9	0246.5		350			R
	5730	IRKU	45 C	0244.9	0245.9	15	250			R
	1400	SYDN	40 F	0245	0264	10	180			
	700	SYDN	40 F	0245	0261	10	240			
	200	HIRA	46 C	0245	0246	9	10000	500		ML
	8800	MANI	45 C	0245.1	0246.3		430.5			
	8800	MANI	45 C	0245.1	0245.9	4.6	369	114.7		IG
	606	MANI	4 S/F	0245.2	0246.5	2.6	46.4	15.5		
	100	HIRA		0245.5	0251		25000			WL
	100	HIRA	46 C	0245.5	0246.5	12	50000	1000		0
	35000	NAGO	5 S	0246	0247	3	91			
	200	GORK	46 C	0248 E	0251 U	6	6000			
	100	GORK		0248 E	0251.1		999999			
	100	GORK	45 C	0248 E	0249.8	3.6	4400			
	35000	NAGO	29 PBI	0249	0252	10	15			
	100	GORK	43 NS	0254		606		20		
	200	GORK	44 NS	0300		600		5		
	260	ONDR	44 NS	0528 E		586 D	25	2		
	127	TORN	44 NS	0800 E	1031.8	430 D	56	6.5		V1
	245	SGMR	44 NS	0912 E	1139.3	908 D	150			2,3G
	410	SGMR	44 NS	0912 E	1914.4	908 D	155			2,3G
	3100	CRIM	25 R	0906	0920		6			
	3100	CRIM	20 GRF	0932	0942	27	3	1		
	2800	OTTA	1 S	1649	1651.5	5	9.8	4.6		
	4995	BOUL	2 SF	1720.5	1721.5	1.5	9	3		
	2800	OTTA	20 GRF	2016	2023.5	16	4.8	2.2		
	2800	OTTA	20 GRF	2105	2155	110	4.8	2.4		
29	5730	IRKU	20 GRF	0301.9	0302.7	13	8	4		R

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	5730	IRKU	2 S	0324	0324.5	6	32	5		
	4995	MANI	3 S	0324.2	0324.6	1.2	20.9	7		
	8800	MANI	3 S	0324.2	0324.5	1.2	58.1	19.3		
	8800	ATHN	3 S	0428.1	0430.6	7.1	37.4	11.2		
	4995	ATHN	4 S/F	0428.4	0430.7	10	91.7	27.5		
	2695	ATHN	4 S/F	0428.7	0430.8	14.6	67.5	20.3		
	200	GORK	46 C	0428.9	0430.5	4	30			
	5730	IRKU	2 S	0428.9	0429.9	12	43	5		R
	2950	GORK	3 S	0429.4	0430.7	5.3	76			
	4995	MANI	3 S	0429.5	0430.9	5.5	69.2	23.1		
	2695	MANI	3 S	0429.8	0430.9	3.5	64.8	21.6		
	100	GORK	8 S	0429.8		4.5	200			
	1415	ATHN	3 S	0429.9	0430.8	3	14.4	4.3		
	29	UPIC	2 S/F	0430	0430.6	1.5				
	700	SYDN	1 S	0430	0430.5	3	13			
	1400	SYDN	1 S	0430	0430.7	1.6	10			
	8800	MANI	3 S	0430.1	0430.7	1.9	35.6	11.9		IG
	1415	MANI	3 S	0430.2	0430.9	2.9	13.2	4.4		
	15000	KISV	29 PRI	0456	0458	4	30 D			
	8800	ATHN	4 S/F	0456.2	0457.8	7.8	422	126.6		
	8400	BERN	3 S	0456.4	0457.7	6	95	251		-19
	10400	BERN	3	0456.4	0457.7	6	68	197		
	8900	BERN	3	0456.4	0457.7	6	85	231		-17
	4995	ATHN	4 S/F	0456.5	0457.9	10.8	377	113.1		
	2695	ATHN	4 S/F	0456.7	0457.8	9.2	180	54		
	700	SYDN	4 S	0457	0457.8	4.5	100			
	2950	GORK	3 S	0457	0457.8	2.3	96			
	228	HARS	C	0457	0457.7U	1.7	320 D	90		
	5730	IRKU	2 S	0457.2	0457.8	14	220	10		R
	4995	MANI	3 S	0457.3	0457.9	3.7	276.9	91.8		
	9100	GORK	3 S	0457.4	0457.8	2.9	232	116		
	950	GORK	3 S	0457.5	0458	5.3	23	11		
	100	GORK	8 S	0457.5	0458.7U	2	1820			
	650	GORK	29 PBI	0457.5	0458.2	9.9	15	4.3		
	650	GORK		0457.5	0457.9		32			
	650	GORK	45 C	0457.5	0457.7	.7	38			
	100	HIRA	7 C	0457.5	0457.8	1	30000	9999		ML
	200	HIRA	7 C	0457.5	0457.6	1	30000	7000		O
	500	HIRA	46 C	0457.5	0457.8	4	150	20		WR
	1415	ATHN	4 S/F	0457.5	0458	4	71.8	21.5		
	29	UPIC	4 S/F	0457.6	0458.1	1.3				
	1415	MANI	3 S	0457.6	0458.2	3.4	77.9	26.4		
	2695	MANI	3 S	0457.6	0458	2.5	171.4	57.1		
	200	GORK		0457.6	0457.9	3	30			
	8800	MANI	3 S	0457.7	0457.9	1	264	88		I
	606	MANI	3 S	0457.7	0457.9	1	31.8	10.5		
	1400	SYDN	3 S	0507	0508	6	65			
	260	ONDR	44 NS	0520 E		597 D	64	4		
	245	SGHR	44 NS	0913 E	0952.2	907 D	99			
	410	SGHR	44 NS	0913 E	2213.7	907 D	36.8			
	237	TRST	41 F	0658.2	0658.2	.2	95			O
	3000	BERL	3 S	0712	0713.5	3	7.9			
	3100	CRIM	1 S	0712	0714	5	3	1		
	930	BORD	46 C	0717	0717.2	.7	183	8		
	808	CNDR	8 S	0717	0717	.3	65			
	33	UPIC	45 C	0834.7	0835	1.9				
	29	UPIC	45 C	0835.1	0835.3	1.4				
	2695	ATHN	3 S	0843.6	0844.1	2.9	41.3	12.4		
	4995	ATHN	3 S	0843.6	0844.1	2.6	49.8	14.9		
	1420	ARCE	4 S/F	0843.6	0843.7	2				
	1420	ARCE	41 SER	0843.6	0847.2	7				
	8900	BERN	3	0843.7	0844	3	15	42		O
	8400	BERN	3 S	0843.7	0844	3	19	50		O
	10400	BERN	3	0843.7	0844	3	12	36		
	1415	ATHN	3 S	0843.7	0844.3	2.8	7.2	2.2		
	8800	ATHN	3 S	0843.7	0844.1	2.1	43.6	13.1		
	930	BORD	42 SER	0843.7	0843.7	6.6	200	1		
	9100	GORK	41 F	0843.9	0844.2	5.9	41			
	9100	GORK		0843.9	0847.7		112			
	9100	ARCE	3 S	0843.9	0844.2	1.5				
	9100	ARCE	41 SER	0843.9	0847.7	6				
	6100	KISV	8 S	0844	0844.1	2	35			
	3100	CRIM	1 S	0844	0844.5	3	18 D	6		
	8800	MANI	41 F	0844	0847.8	4.5	101.2	33.7		
	2695	MANI	41 F	0844	0847.9	5.6	73.6	24.1		
	1415	MANI	41 F	0844	0847.5	5.4	44.1	14.7		
	4995	MANI	41 F	0844.2	0847.8	5.6	88.5	29		
	2650	OWIN	1 S	0844	0844	2	30	5		
	10715	OWIN	1 S	0844	0844	1	30	5		
	3100	CRIM	3 S	0847	0847.5	4	75 D	25		
	6100	KISV	8 S	0847	0847.3	2	87			
	9100	ARCE	3 S	0847.1	0847.7	2.8				
	8400	BERN	3 S	0847.1	0847.5	9	41	110		12
	10400	BERN	3	0847.1	0847.5	9	26	77		
	8900	BERN	3	0847.1	0847.5	9	35	95		12

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	2950	GORK	1 S	0847.2	0847.6	1.6	16			
	950	GORK	8 S	0847.3	0847.5	.4	52	26		
	2650	DWIN	1 S	0847	0848	4	80	10		
	10715	DWIN	1 S	0847	0847	2	75	10		
	1420	ARCE	4 S/F	0847	0847.2	3.6				
	930	BORD	8 S	0911	0911	.3	111	2		
	3100	CRIM	25 R	0955	1015		7			
	930	BORD	41 F	0956.5	0957	1	18	2		
	930	BORD	41 F	1003.5	1004.6	2	128	2		
	10400	BERN	46	1112	1121.3	4	6	17		
	8300	BERN	46	1112	1121.3	4	7	20		7
	8400	BERN	46 C	1112	1121.3	4	9	25		12
	9100	ARCE	1 S	1112.2	1112.5	.8				
	1420	ARCE	40 F	1119.8	1120.2	2.5				
	3000	BERL	4 S/F	1120	1121	2.5	13			
	9500	BERL	3 S	1120	1121	2	12			
	8800	SGMR	3 S	1120	1121	2	14.7	5.9		
	9100	GORK	2 SF	1120.1	1121.4	2	18	6.8		
	1415	SGMR	1 S	1120.3	1120.5	1.7	9.7	3.9		
	9100	ARCE	45 C	1120.3	1121.5	3.7				
	2695	SGMR	3 S	1120.5	1122.5	2.4	10.2	4.1		
	4995	SGMR	3 S	1120.7	1121.4	1.8	15.1	6		
	930	BORD	41 F	1120.7	1121	.8	57	2		
	808	ONDR	8 S	1120.8	1120.8	1.5	50			
	2800	OTTA	3 S	1120	1121.7	2.5	10.4	4		
	650	GORK	1 S	1121	1121.2	.6	18	9		
	950	GORK	1 S	1121	1121	.2	5	2.5		
	606	SGMR	3 S	1121.4	1121.4	.8	77.7	31.1		
	4995	BOUL	4 SF	1410.5E	1416	9.5D	34	11		
	536	ONDR	46 C	1412	1413.8	10	50	6.4		
	4995	SGMR	3 S	1413.5	1415.6	16	81	32		5,SWF
	9400	HUAN	3 S	1413.6	1422.2	8.6	34.4	50.3		L
	1420	ARCE	4 S/F	1413.6	1415.7	8				
	3000	BERL	4 S/F	1414	1415.7	7.5	71			
	260	ONDR	45 C	1414.6		4	206 D	37		
	10400	BERN	4	1414.8	1416.2	7	11	31		
	8900	BERN	4	1414.8	1416.2	7	14	39		-25
	8400	BERN	4 S/F	1414.8	1416.2	7	20	52		-30
	606	SGMR	3 S	1415	1416.2	4.9	24.1	9.6		5,SWF
	245	SGMR	48 GB	1415.1	1416	3.5	1070	432		5,SWF
	234	POTS	45 C	1415.1	1416.1	4.1	1500	200		
	113	POTS	45 C	1415.2	1415.4	4.9	9000	2000		
	237	TRST	41 F	1415.2	1416	1.6	1810			3L
	2695	SGMR	3 S	1415.3	1415.5	14.6	66.3	27		5,SWF
	9100	ARCE	3 S	1415.3	1416.3	4				
	410	SGMR	7 S	1415.4	1415.5	6.1	253	102		5,SWF
	1415	SGMR	3 S	1415.4	1415.6	4.2	32.6	13		5,SWF
	9500	BERL	4 S/F	1415.4	1415.6	2.1	28			
	228	HARS	48 C	1415.5	1416.5	3.5	450	200 D		
	127	TORN	47 GB	1415.5	1416 D	3.8	1600 D	530 D		
	8800	ATHN	4 S/F	1415.5	1416.2	2.7	54.2	16.3		
	1415	ATHN	3 S	1415.5	1415.8	1.8	14.4	4.3		
	2695	ATHN	4 S/F	1415.5	1416	2	54.2	16.3		
	4995	ATHN	4 S/F	1415.5	1416.2	2	75.5	22.7		
	808	ONDR	3 S	1415	1416.2	10	32	12.2		
	930	BORD	3 S	1415	1416	6	23	7		
	2695	BOUL	4 SF	1415 E	1417	11 D	63	21		
	1420	BOUL	4 SF	1415 E	1416	11.5D	35	11		
	29	UPIC	4 S/F	1416.4	1417	1.5				
	18	MCMA	6 S	1416	1417	3			1	
	33	UPIC	4 S/F	1417	1417.3U	2.3				
	9400	HUAN	29 PBI	1422.2	1440.5	18.3	4.7	34		L
	2800	OTTA	20 GRF	1500	1530	30	3	1.5		
	9100	ARCE	2 S/F	1612.4	1612.9	1.4				
	2800	OTTA	20 GRF	1850	1930	140	5.8	2.9		
	2800	OTTA		2210	2233	40 D	8.4			
30	8800	MANI	3 S	0152.8	0153.2	1.7	40.3	13.4		
	2695	MANI	1 S	0153.1	0153.6	1	6.8	2.3		
	4995	MANI	1 S	0153.1	0153.7	1.4	3.2	1.1		
	8800	MANI	3 S	0210.3	0210.8	1	31.7	10		
	4995	MANI	3 S	0210.4	0211	2.2	8	3.2		
	1415	MANI	3 S	0221.3	0221.9	1	20.2	7.1		
	4995	MANI	3 S	0231.9	0233.8	3.8	11.2	3.2		
	8800	MANI	3 S	0233	0233.7	1.9	15.8	5.2		
	1400	SYDN	1 S	0233	0234	1	5			
	1415	MANI	1 S	0233.2	0233.5	.6	2.4	.7		
	2695	MANI	1 S	0233.3	0233.6	.9	4.1	1.3		
	260	ONDR	44 NS	0522		332	81			
	6100	KISV	21 GRF	0711	0716	10	8			
	237	TRST	41 F	0741.5	0741.6	.3	235			4L
	237	TRST	41 F	0820.2	0820.3	.4	295			5L
	3100	CRIM	3 S	0905	0915	27	16	5		
	3100	CRIM	29 PBI	0905	0915		6			
	2650	DWIN	6 S	0912	0915	15	15	10		

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	9100	ARCE	45 C	1050	1050.3	2.2				
	408	TRST	48 C	1051	1052.3	1.1	160 D			
	1420	ARCE	4 S/F	1051.7	1052.2	1.6				
	234	POTS	45 C	1051.8	1052.7	1.8	420	50		
	200	GORK	8 S	1052	1052.3	1.3	45			
	2950	GORK	1 S	1052	1052.4	.9	4.8	2.4		
	2695	SGMR	1 S	1052	1052.5	1.9	7.2	3.6		3
	245	SGMR	6 S	1052	1052.8	3.5	130	65		3
	3100	CRIM	1 S	1052	1052.5	4	6	2		
	6100	KISV	8 S	1052	1052.3	1	7			
	410	SGMR	7 S	1052.1	1052.6	2.7	301	151		3
	1415	SGMR	3 S	1052.1	1052.5	1.6	10.7	5.4		3
	100	GORK	8 S	1052.1	1052.3	1.2	190			
	650	GORK	1 S	1052.1	1052.3	2.3	4	2		
	237	TRST	41 F	1052.1	1052.6	.8	920			2L
	536	ONDR	8 S	1052.1	1052.1	.4	53			
	29	UPIC	8 S	1052.2	1052.4	.7				
	33	UPIC	8 S	1052.2	1052.2	1				
	950	GORK	1 S	1052.2	1052.6	.8	5	2.5		
	228	HARS	48 C	1052.2	1052.7	1.2	600 D	100		
	4995	SGMR	3 S	1052.2	1052.4	1.6	10.1	5.1		3
	606	SGMR	3 S	1052.2	1052.5	1.3	23.6	11.8		3
	330	BORD	3 S	1052	1052.5	1.6	12	6		
	2800	CTTA	20 GRF	1055	1155	105	3.4	1.7		
	2695	ATHN	3 S	1446.4	1449	6.8	45.2	13.6		
	4995	ATHN	4 S/F	1446.4	1449	8.4	58.5	17.6		
	9500	BERL	3 S	1446.5	1448.6	5	19			
	3000	BERL	3 S	1446.5	1448.5	8.5	51			
	2800	OTTA	3 S	1446.5	1449	10	44	13		
	8900	BERN	20	1446.8	1451.2	8	9	20		0
	8400	BERN	20 GRF	1446.8	1451.2	8	10	25		0
	10400	BERN	20	1446.8	1451.2	8	6	18		
	1420	BOUL	4 SF	1446	1449	5.5	6	2		
	4995	BOUL	4 SF	1446	1448.5	6.5	38	12		
	9400	HUAN	3 S	1447.2	1455.7	8.5	26.9	29.2		L
	9100	ARCE	1 S	1447.2	1449.4	7				
	2695	SGMR	3 S	1447.3	1449.1	4.1	54.5	16.4		
	8800	SGMR	3 S	1447.3	1449.1	4	24.5	7.4		
	4995	SGMR	3 S	1447.3	1449.1	3.9	51.8	15.5		
	8800	ATHN	3 S	1447.4	1449.1	6.1	27.3	8.2		
	2650	OWIN	3 S	1447	1449	8	50	20		
	2695	BOUL	1 S	1447 E	1450.5	9.5D	30	10		
	1420	ARCE	1 S	1447	1449	6				
	9400	HUAN	29 PBI	1455.7	1510.8	15.1	5			0
	245	SGMR	43 NS	1512	1716.4	548 D	36.6			5
	410	SGMR	43 NS	1512	1716.4	548 D	30			5
	9100	ARCE	20 GRF	1529.5	1546	35				
	1420	BOUL	2 SF	1535.5	1536	1	3	1		
	1420	ARCE	1 S	1536.1	1536.2	.5				
	2695	SGMR	3 S	1624.5	1627.3	7.5	46.5	14		
	4995	SGMR	3 S	1624.5	1627.1	5.7	37.1	11.1		
	2900	OTTA	3 S	1625.2	1627	4.8	42	10.6		
	9400	HUAN	3 S	1625.6	1631.5	5.9	11.8	22.2		L
	2695	ATHN	3 S	1625.6	1627	3.6	38.8	11.6		
	4995	ATHN	3 S	1625.9	1627	3.2	32.5	1		
	4995	BOUL	4 SF	1625	1626.5	3	24	8		
	1415	SGMR	3 S	1626.4	1627.4	5.1	10.1	3		
	2695	BOUL	1 S	1626.5	1628.5	6	30	10		
	1420	ARCE	2 S/F	1626.5	1627.1	4.5				
	9100	ARCE	2 S/F	1626.8	1627.2	1.6				
	8800	ATHN	3 S	1626.9	1627.1	0.6	6.8	2		
	2650	OWIN	2 S	1626	1627	4	45	15		
	1420	BOUL	2 SF	1626	1627.5	4 D	9	3		
	606	SGMR	1 S	1627.2	1627.3	.4	4.2	1.3		
	2800	OTTA	29 PBI	1630	1630	15	4.8	2.4		
	2800	OTTA		1650	1705.2	40	30			
	9400	HUAN	20 GRF	1702.1	1737.2	35.1	8.4			0
	1420	BOUL	41 F	1702.5	1714	13.5	20	7		
	4995	SGMR	3 S	1702.5	1714.5	16.7	31.6	9.5		SWF
	2695	SGMR	3 S	1702.6	1715.2	16.6	51.6	15.5		SWF
	4995	BOUL	41 F	1702	1713.5	12.5D	18	6		
	2695	BOUL	41 F	1703.5	1716	13.5	30	10		
	930	BORD	42 SER	1706	1710.5	11	137	2		
	1415	SGMR	3 S	1707.1	1714.3	11.4	39	11.7		SWF
	606	SGMR	3 S	1707.4	1707.8	9.1	317	95.1		SWF
	8800	SGMR	3 S	1719.4	1719.6	1.6	164	32.8		SWF
	2800	OTTA	32A ABS	1735	1750	35	4	2		
	9400	HUAN	28 GRF	1754.4	1904.4	70	11.8			0
	2800	CTTA	1 S	1800.5	1802	3	5.2	2.6		
	4995	BOUL	4 SF	1800.5	1801.5	3 D	15	5		
	2695	BOUL	4 SF	1801.5	1803	3	7	2		
	2800	OTTA	20 GRF	1815	2000	235	4.8	2.6		

SOLAR RADIO EMISSION
OUTSTANDING OCCURRENCES

JUNE 1978

Reports received from the following observatories:

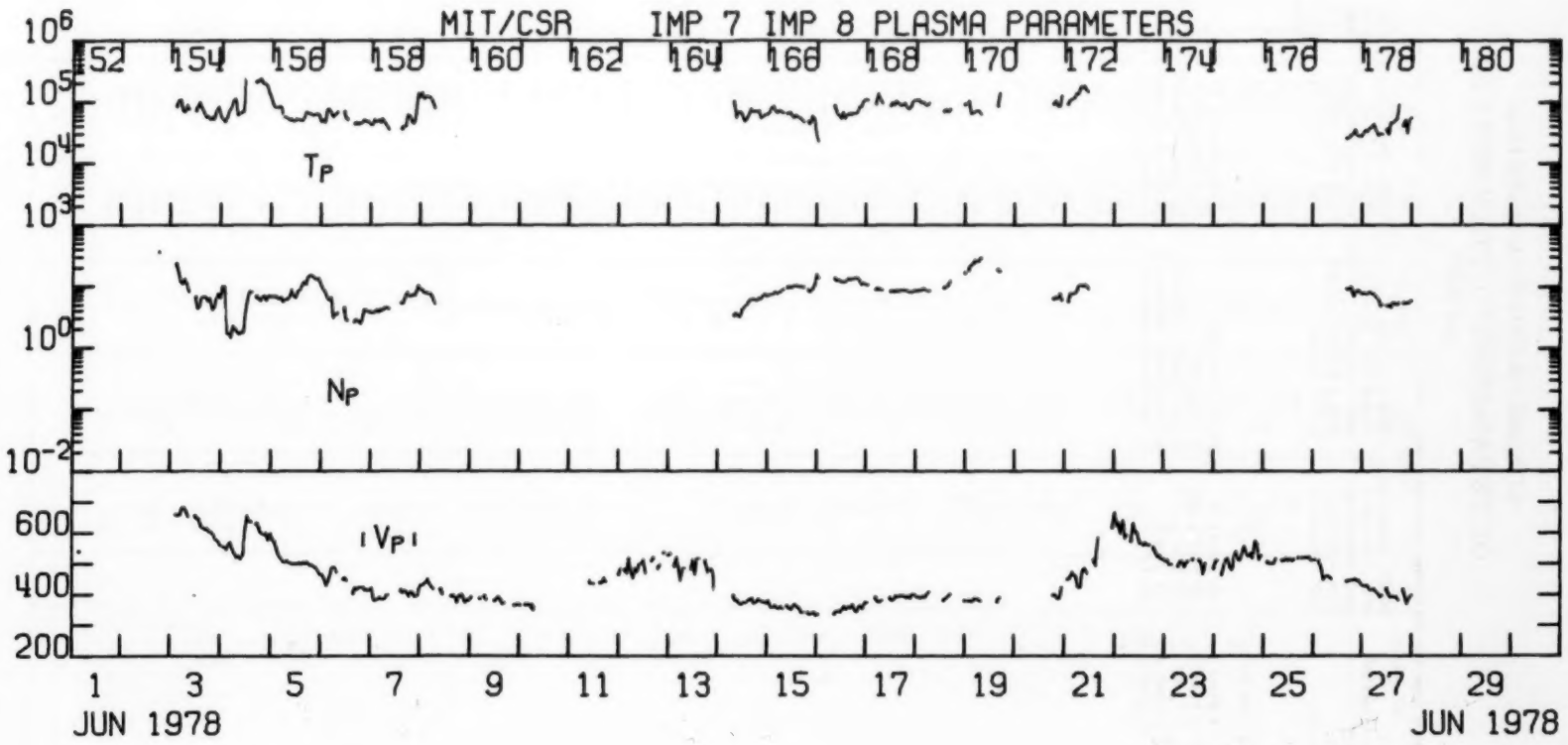
ARCE = Arcetri
BERL = Berlin-Adlershof
BORD = Bordeaux
BOUL = Boulder
CRIM = Simferopol
DWIN = Dwingeloo
GORK = Gorky
HARS = Harestua
HIRA = Hiraiso
HUAN = Huancayo
IRKU = Irkutsk
KIEV = Kiev
MANI = Manila
MCMA = McMath-Hulbert
NAGO = Nagoya
ONDR = Ondrejov
OTTA = Ottawa
PENT = Penticton
POTS = Potsdam
SAOP = Sao Paulo
SGMR = Sagamore Hill
SYDN = Sydney
TORN = Torun
TYKW = Toyokawa
TRST = Trieste
VORO = Voroshilov (Ussurisk)

Explanation of Type Code:

1 Simple 1
2 Simple 1F
3 Simple 2
4 Simple 2F
5 Simple
6 Minor
7 Minor +
8 Spike
20 Simple 3
21 Simple 3A
22 Simple 3F
23 Simple 3AF
24 Rise
25 Rise A
26 Fall
27 Rise and Fall
28 Precursor
29 Post Burst Increase
30 Post Burst Increase A
31 Post Burst Decrease
32 Absorption
40 Fluctuation
41 Group of Bursts
42 Series of Bursts
43 Onset of Noise Storm
44 Noise Storm in Progress
45 Complex
46 Complex F
47 Great Burst
48 Major
49 Major +

IMP 7 AND 8 SOLAR WIND PLASMA

JUNE 1978



MAY 1978 DATA

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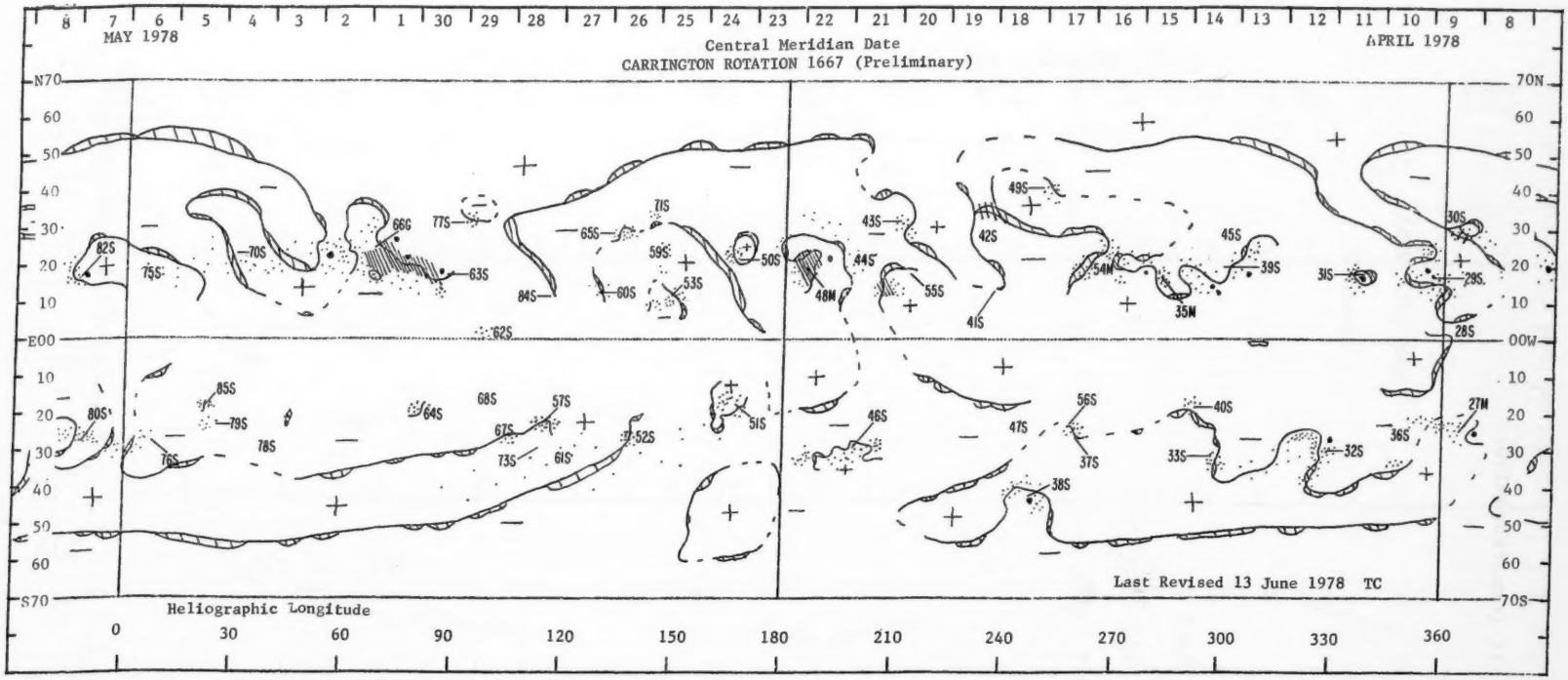
ABBREVIATED CALENDAR RECORD

Hα SYNOPTIC CHART

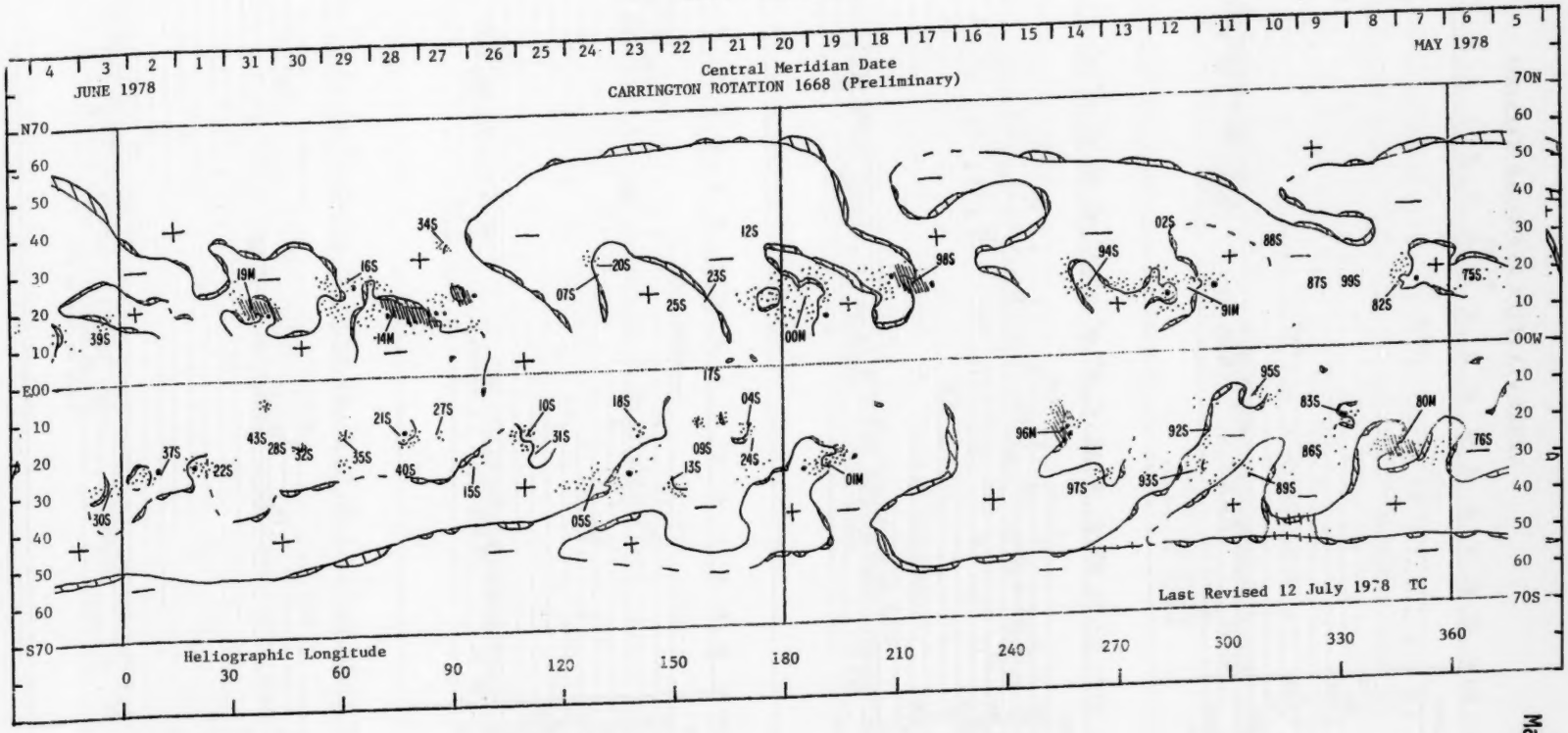
APRIL - MAY 1978



ABBREVIATED CALENDAR RECORD

Hα SYNOPTIC CHART

MAY - JUNE 1978



ABBREVIATED CALENDAR RECORD

MAY 1978

May 1, 1978

FLARES: 1f/80 — 2b/66

Bursts: cm; dm; m: noise storm; Dkm

SID

X-Rays

Ap 88 D5 — Kp: 3- 5- 6- 5+ 7+ 4+ 7- 8+ — sc: 0828(17) 1835(15)

Aurora — USSR: ϕ = 49° 2000 (HB); ϕ = 60° 0000 (R_{1-2} B2); ϕ = 59° 0100-0300 (R_2R2-3) — W.E.

Cosmic Rays

Green Corona — E. Limb 7 days earlier: NE- moderately bright SE- — W. Limb 7 days later: NW- moderately bright SW-

Indices — Rz: 77 10cm flux: 178 Flare: 539/22.6 Ca: 46.8 Ip: 9 Ia: 9

Solar Regions: 15266 N24 (H)

Sunspots: 20018 N20 (γ)5 CMP Apr. 30; 20019 N25 (β)5; 20020 N23 (δ)4 CMP May 2

May 2, 1978

FLARES: 1n/66 — 1b/66

Bursts: cm; dm; m: noise storm; Dkm

SID

X-Rays

Ap 94 D1 — Kp: 7+ 6- 7+ 7o 7o 5+ 4- 5- — sc: 2318(14)

Aurora — USSR: ϕ = 57° 0000-0300 and 2300 (R_2R2) — W.E.

Cosmic Rays: Forbush decrease, which began on April 30, reached a maximum of 17%

Green Corona — E. Limb 7 days earlier: NE- no data SE- no data — W. Limb 7 days later: NW- moderately bright SW- moderately bright

Indices — Rz: 85 10cm flux: 180 Flare: 156/23.0 Ca: 50.2 Ip: 9 Ia: 9

Solar Regions

Sunspots

May 3, 1978

FLARES: 1b/52 — 1f/52 — 1b/66

Bursts: cm; dm; m: noise storm; Dkm

SID

X-Rays

Ap 83 D4 — Kp: 5- 5+ 6o 5+ 7- 7- 6o 7o — sc

Aurora — USSR — W.E.

Cosmic Rays

Green Corona — E. Limb 7 days earlier: NE- no data SE- no data — W. Limb 7 days later: NW- no data SW- no data

Indices — Rz: 91 10cm flux: 179 Flare: 76/23.1 Ca: 50.7 Ip: 6 Ia: 7

Solar Regions

Sunspots

May 4, 1978

FLARES: 1n/66 — 1n/66 — 1n/66

Bursts: cm; dm; m: ns noise storm; Dkm

SID

X-Rays

Ap 96 D2 — Kp: 7+ 8- 7+ 6+ 7- 4+ 5- 2- — sc

Aurora — USSR — W.E.

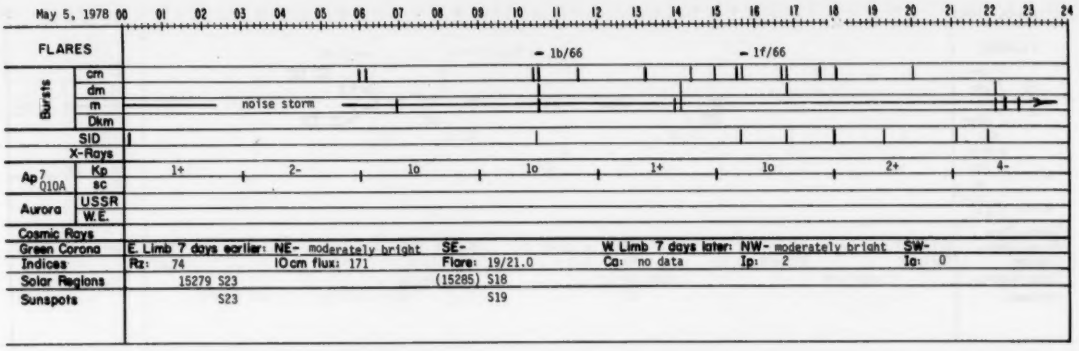
Cosmic Rays

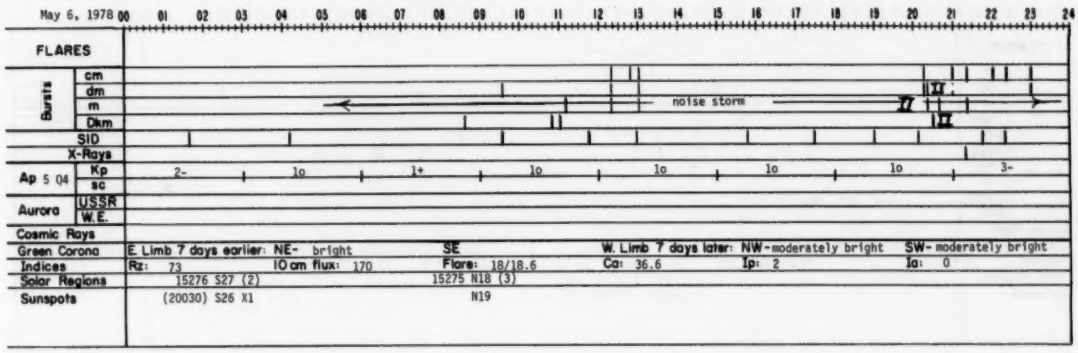
Green Corona — E. Limb 7 days earlier: NE- bright SE — W. Limb 7 days later: NW- moderately bright SW-

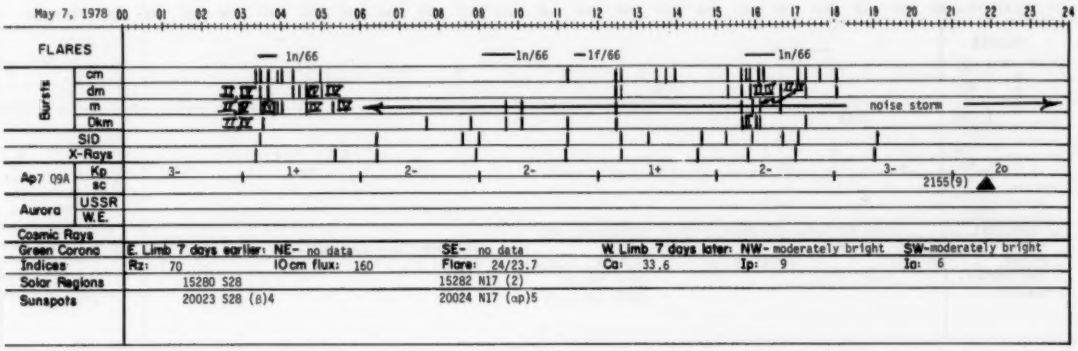
Indices — Rz: 76 10cm flux: 175 Flare: 84/23.7 Ca: 47.2 Ip: 3 Ia: 5

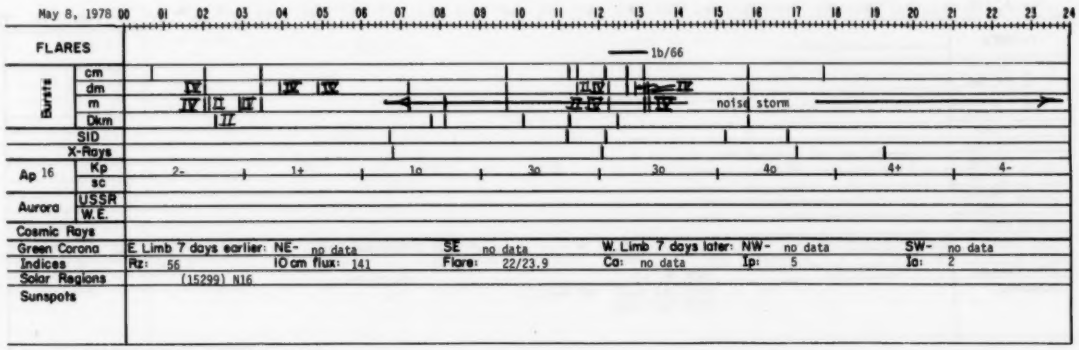
Solar Regions: (15278) S30; 15270 N25 (4)

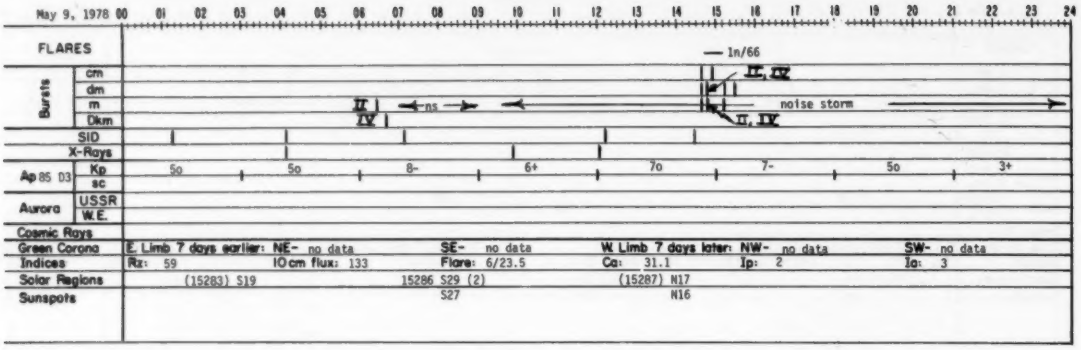
Sunspots: (20020) N23 (βp)4 CMP May 2

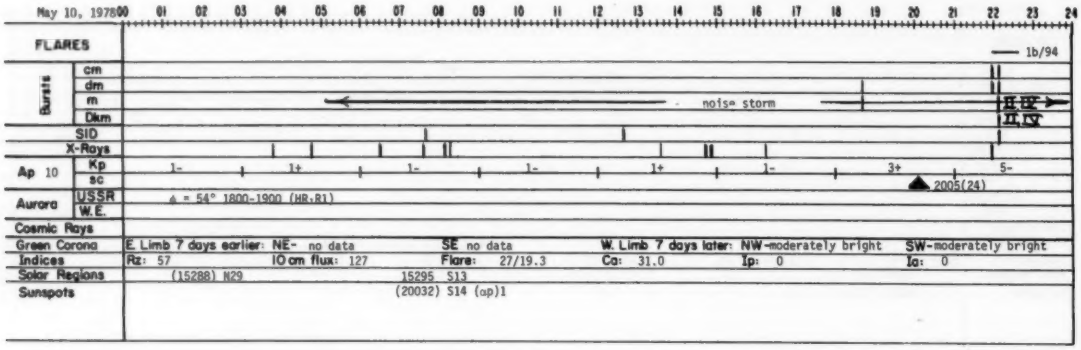

May 5, 1978
FLARES
1b/66
1f/66
Bursts
cm
dm
m
noise storm
Dkm
SID
X-Rays
Ap 7 010A
Kp
1+ 2- 1o 1o 1+ 1o 2+ 4-
sc
Aurora
USSR
W.E.
Cosmic Rays
Green Corona
E. Limb 7 days earlier: NE- moderately bright SE-
W. Limb 7 days later: NW- moderately bright SW-
Indices
Rz: 74 10cm flux: 171 Flare: 19/21.0 Ca: no data Ip: 2 Ia: 0
Solar Regions
15279 S23 (15285) S16
Sunspots
S23 S19

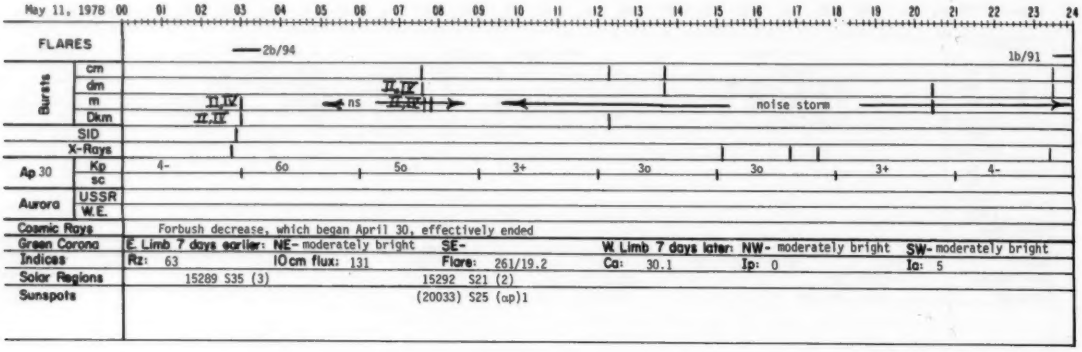

May 6, 1978
FLARES
Bursts
cm
dm
m
noise storm
Dkm
SID
X-Rays
Ap 5 Q4
Kp
2- 1o 1+ 1o 1o 1o 1o 3-
sc
Aurora
USSR
W.E.
Cosmic Rays
Green Corona
E. Limb 7 days earlier: NE- bright SE
W. Limb 7 days later: NW- moderately bright SW- moderately bright
Indices
Rz: 73 10cm flux: 170 Flare: 18/18.6 Ca: 36.6 Ip: 2 Ia: 0
Solar Regions
15276 S27 (2) 15275 N18 (3)
Sunspots
(20030) S26 X1 N19

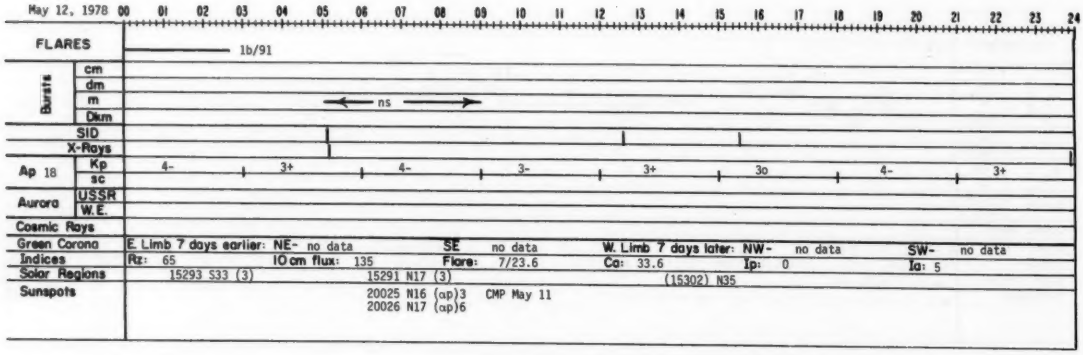

May 7, 1978
FLARES
1n/66
1n/66
1f/66
1n/66
Bursts
cm
dm
m
noise storm
Dkm
SID
X-Rays
Ap7 09A
Kp
3- 1+ 2- 2- 1+ 2- 3- 2o
sc
2155(9)
Aurora
USSR
W.E.
Cosmic Rays
Green Corona
E. Limb 7 days earlier: NE- no data SE- no data
W. Limb 7 days later: NW- moderately bright SW-moderately bright
Indices
Rz: 70 10cm flux: 160 Flare: 24/23.7 Ca: 33.6 Ip: 9 Ia: 6
Solar Regions
15280 S28 15282 N17 (2)
Sunspots
20023 S28 (β)4 20024 N17 (αp)5

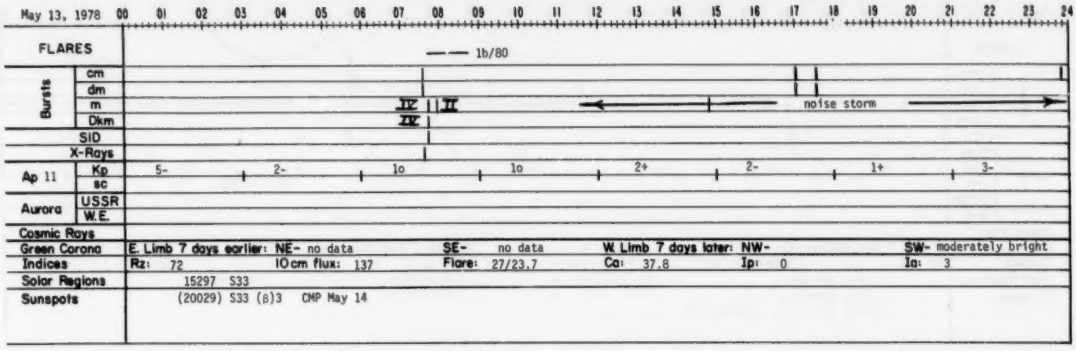

May 8, 1978
FLARES
1b/66
Bursts
cm
dm
m
noise storm
Dkm
SID
X-Rays
Ap 16
Kp
2- 1+ 1o 3o 3o 4o 4+ 4-
sc
Aurora
USSR
W.E.
Cosmic Rays
Green Corona
E. Limb 7 days earlier: NE- no data SE no data
W. Limb 7 days later: NW- no data SW- no data
Indices
Rz: 56 10cm flux: 141 Flare: 22/23.9 Ca: no data Ip: 5 Ia: 2
Solar Regions
(15299) N16
Sunspots

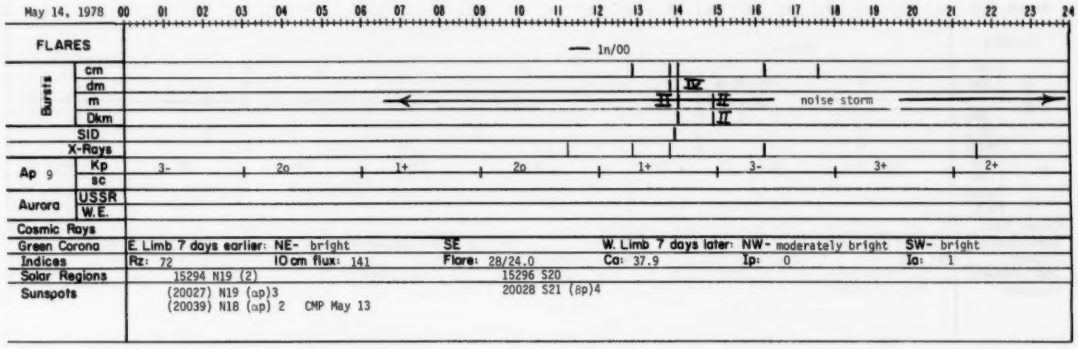

May 9, 1978
FLARES
1n/66
Bursts
cm
dm
m
Dkm
ns
noise storm
SID
X-Rays
Ap 85 03
Kp
sc
5o 5o 8- 6+ 7o 7- 5o 3+
Aurora
USSR
W.E.
Cosmic Rays
Green Corona
E. Limb 7 days earlier: NE- no data SE- no data W. Limb 7 days later: NW- no data SW- no data
Indices
Rz: 59 10 cm flux: 133 Flare: 6/23.5 Ca: 31.1 Ip: 2 Ia: 3
Solar Regions
(15283) S19 15286 S29 (2) (15287) N17
Sunspots
S27 N16

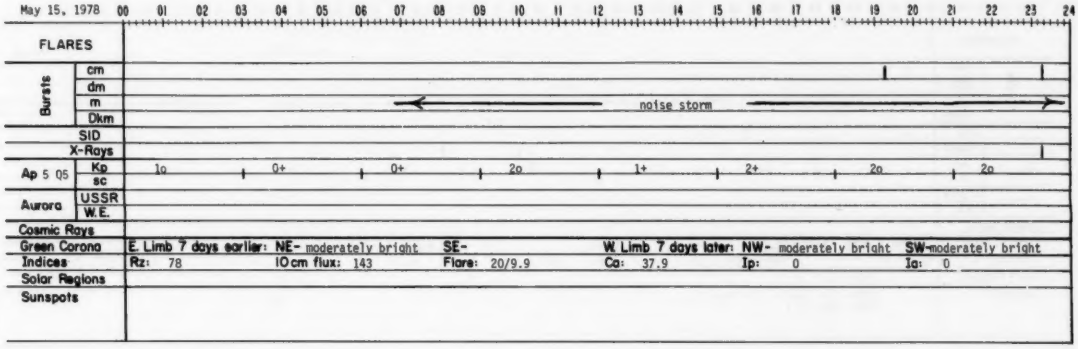

May 10, 1978
FLARES
1b/94
Bursts
cm
dm
m
Dkm
noise storm
SID
X-Rays
Ap 10
Kp
sc
1- 1+ 1- 1- 1+ 1- 3+ 5-
2005(24)
Aurora
USSR
W.E.
φ = 54° 1800-1900 (HR,R1)
Cosmic Rays
Green Corona
E. Limb 7 days earlier: NE- no data SE no data W. Limb 7 days later: NW-moderately bright SW-moderately bright
Indices
Rz: 57 10 cm flux: 127 Flare: 27/19.3 Ca: 31.0 Ip: 0 Ia: 0
Solar Regions
(15288) N29 15295 S13
Sunspots
(20032) S14 (αp)1

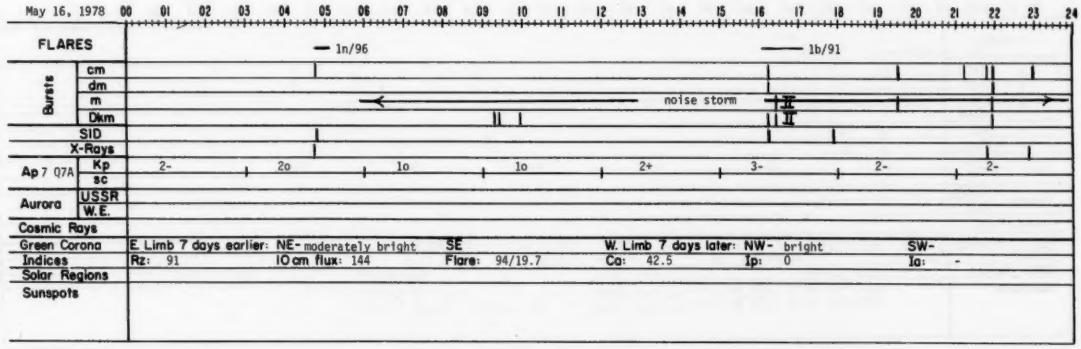

May 11, 1978
FLARES
2b/94
1b/91
Bursts
cm
dm
m
Dkm
ns
noise storm
SID
X-Rays
Ap 30
Kp
sc
4- 6o 5o 3+ 3o 3o 3+ 4-
Aurora
USSR
W.E.
Cosmic Rays
Forbush decrease, which began April 30, effectively ended
Green Corona
E. Limb 7 days earlier: NE- moderately bright SE- W. Limb 7 days later: NW- moderately bright SW- moderately bright
Indices
Rz: 63 10 cm flux: 131 Flare: 261/19.2 Ca: 30.1 Ip: 0 Ia: 5
Solar Regions
15289 S35 (3) 15292 S21 (2)
Sunspots
(20033) S25 (αp)1


May 12, 1978
FLARES
1b/91
Bursts
cm
dm
m
Dkm
ns
SID
X-Rays
Ap 18
Kp
sc
4- 3+ 4- 3- 3+ 3o 4- 3+
Aurora
USSR
W.E.
Cosmic Rays
Green Corona
E. Limb 7 days earlier: NE- no data SE no data W. Limb 7 days later: NW- no data SW- no data
Indices
Rz: 65 10 cm flux: 135 Flare: 7/23.6 Ca: 33.6 Ip: 0 Ia: 5
Solar Regions
15293 S33 (3) 15291 N17 (3) (15302) N35
Sunspots
20025 N16 (αp)3 CMP May 11
20026 N17 (αp)6


May 13, 1978
00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
FLARES
1b/80
Bursts
cm
dm
m
Dkm
noise storm
SID
X-Rays
Ap 11
Kp
sc
5- 2- 1o 1o 2+ 2- 1+ 3-
Aurora
USSR
W.E.
Cosmic Rays
Green Corona
E. Limb 7 days earlier: NE- no data SE- no data
W. Limb 7 days later: NW- SW- moderately bright
Indices
Rz: 72 10cm flux: 137 Flare: 27/23.7 Ca: 37.8 Ip: 0 Ia: 3
Solar Regions
15297 S33
Sunspots
(20029) S33 (β)3 CMP May 14


May 14, 1978
00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
FLARES
1n/00
Bursts
cm
dm
m
Dkm
noise storm
SID
X-Rays
Ap 9
Kp
sc
3- 2o 1+ 2o 1+ 3- 3+ 2+
Aurora
USSR
W.E.
Cosmic Rays
Green Corona
E. Limb 7 days earlier: NE- bright SE
W. Limb 7 days later: NW- moderately bright SW- bright
Indices
Rz: 72 10cm flux: 141 Flare: 28/24.0 Ca: 37.9 Ip: 0 Ia: 1
Solar Regions
15294 N19 (2) 15296 S20
Sunspots
(20027) N19 (αp)3 20028 S21 (βp)4
(20039) N18 (αp) 2 CMP May 13


May 15, 1978
00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
FLARES
Bursts
cm
dm
m
Dkm
noise storm
SID
X-Rays
Ap 5 Q5
Kp
sc
1o 0+ 0+ 2o 1+ 2+ 2o 2o
Aurora
USSR
W.E.
Cosmic Rays
Green Corona
E. Limb 7 days earlier: NE- moderately bright SE-
W. Limb 7 days later: NW- moderately bright SW-moderately bright
Indices
Rz: 78 10cm flux: 143 Flare: 20/9.9 Ca: 37.9 Ip: 0 Ia: 0
Solar Regions
Sunspots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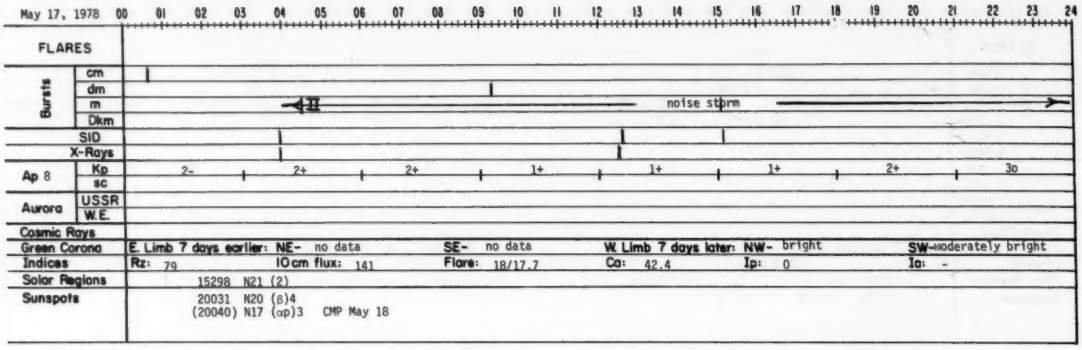
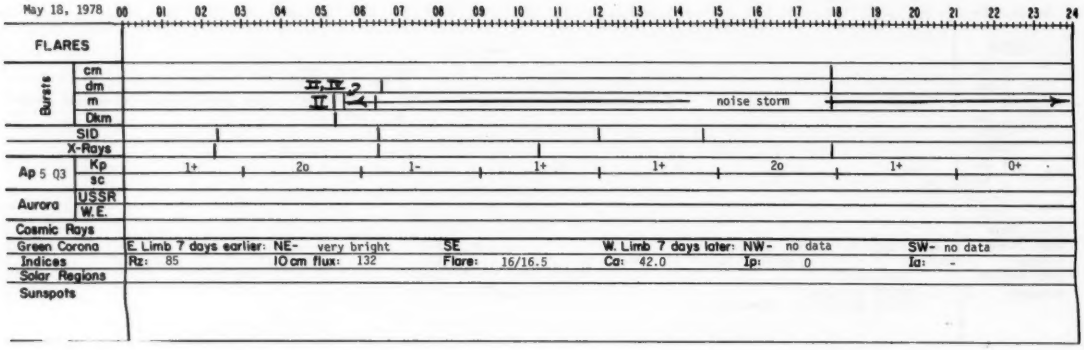
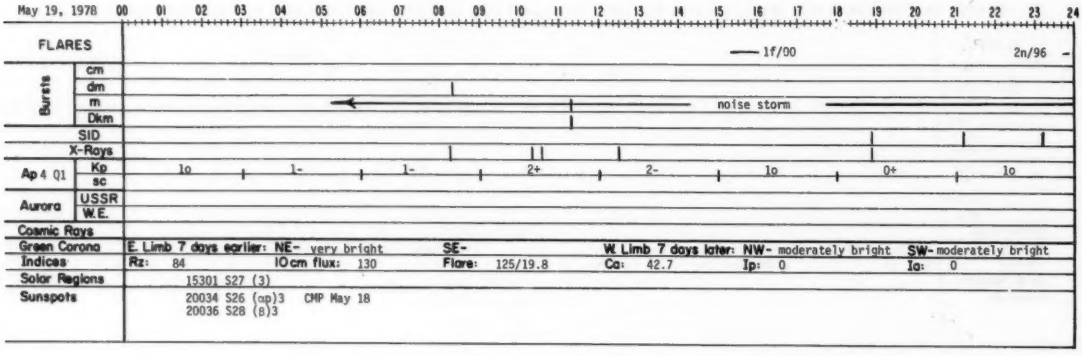
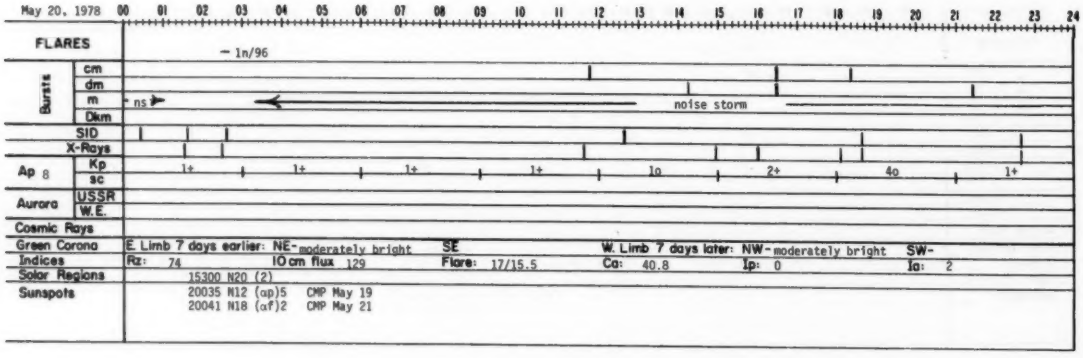
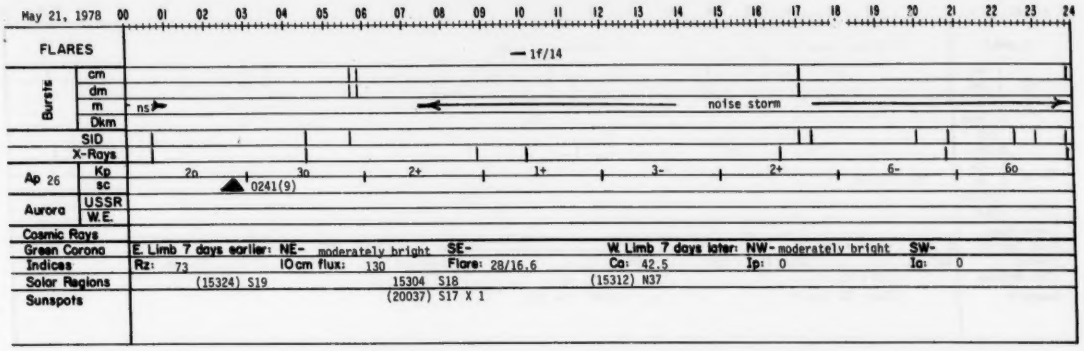
FLARES
1n/96
1b/91
Bursts
cm
dm
m
Dkm
noise storm
SID
X-Rays
Ap 7 Q7A
Kp
sc
2- 2o 1o 1o 2+ 3- 2- 2-
Aurora
USSR
W.E.
Cosmic Rays
Green Corona
E. Limb 7 days earlier: NE- moderately bright SE
W. Limb 7 days later: NW- bright SW-
Indices
Rz: 91 10cm flux: 144 Flare: 94/19.7 Ca: 42.5 Ip: 0 Ia: -
Solar Regions
Sunspots

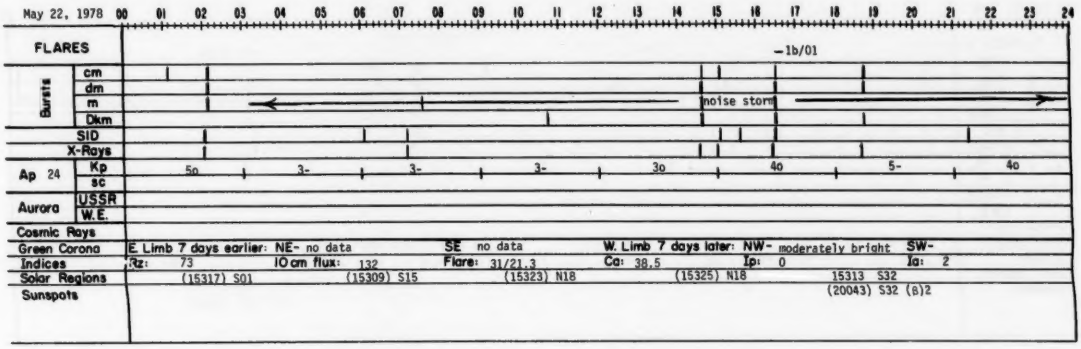

May 17, 1978
00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
FLARES
Bursts
cm
dm
m
Dkm
noise storm
SID
X-Rays
Ap 8
Kp
2- 2+ 2+ 1+ 1+ 1+ 2+ 3o
sc
Aurora
USSR
W.E.
Cosmic Rays
Green Corona
E. Limb 7 days earlier: NE- no data SE- no data W. Limb 7 days later: NW- bright SW-moderately bright
Indices
Rz: 79 10cm flux: 141 Flare: 18/17.7 Ca: 42.4 Ip: 0 Ia: -
Solar Regions
15298 N21 (z)
Sunspots
20031 N20 (β)4
(20040) N17 (αp)3 CMP May 18

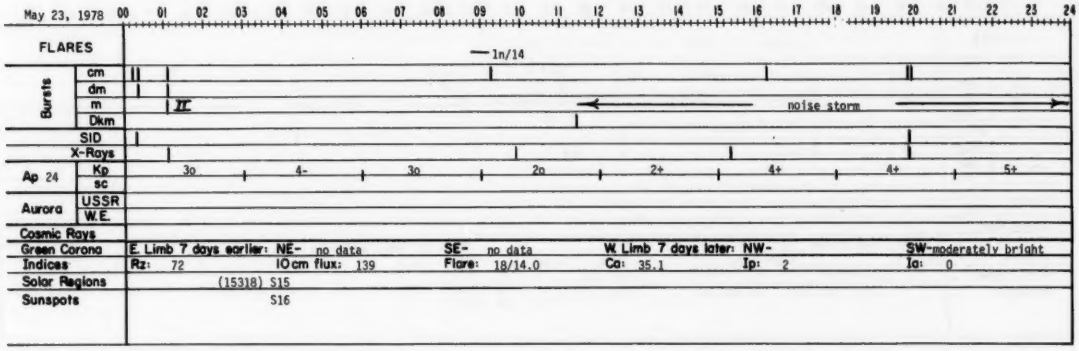

May 18, 1978
00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
FLARES
Bursts
cm
dm
m
Dkm
noise storm
SID
X-Rays
Ap 5 Q3
Kp
1+ 2o 1- 1+ 1+ 2o 1+ 0+
sc
Aurora
USSR
W.E.
Cosmic Rays
Green Corona
E. Limb 7 days earlier: NE- very bright SE W. Limb 7 days later: NW- no data SW- no data
Indices
Rz: 85 10cm flux: 132 Flare: 16/16.5 Ca: 42.0 Ip: 0 Ia: -
Solar Regions
Sunspots

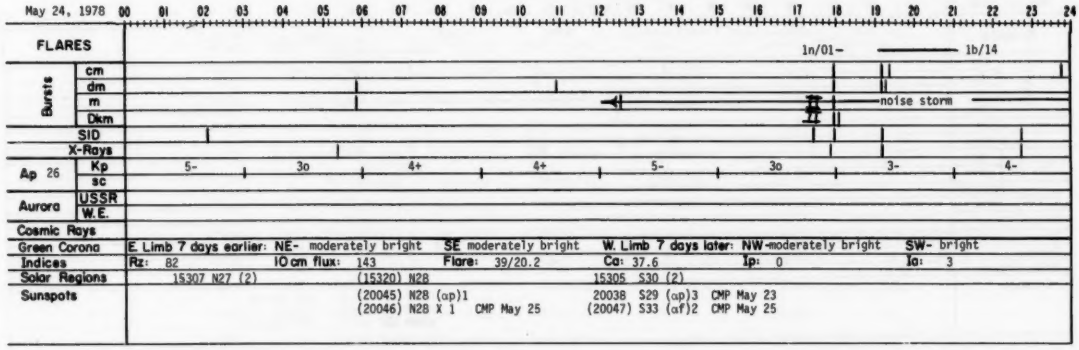

May 19, 1978
00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
FLARES
1f/00
2n/96
Bursts
cm
dm
m
Dkm
noise storm
SID
X-Rays
Ap 4 Q1
Kp
1o 1- 1- 2+ 2- 1o 0+ 1o
sc
Aurora
USSR
W.E.
Cosmic Rays
Green Corona
E. Limb 7 days earlier: NE- very bright SE- W. Limb 7 days later: NW- moderately bright SW- moderately bright
Indices
Rz: 84 10cm flux: 130 Flare: 125/19.8 Ca: 42.7 Ip: 0 Ia: 0
Solar Regions
15301 S27 (3)
Sunspots
20034 S26 (αp)3 CMP May 18
20036 S28 (β)3

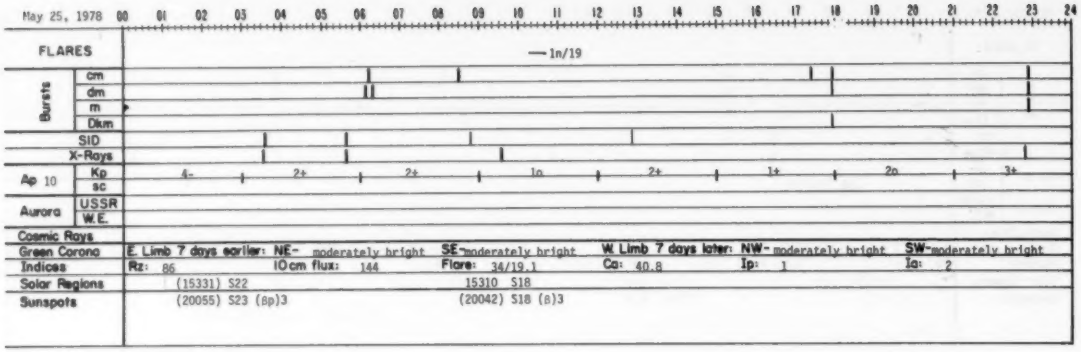

May 20, 1978
00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
FLARES
1n/96
Bursts
cm
dm
m
ns
noise storm
Dkm
SID
X-Rays
Ap 8
Kp
1+ 1+ 1+ 1+ 1o 2+ 4o 1+
sc
Aurora
USSR
W.E.
Cosmic Rays
Green Corona
E. Limb 7 days earlier: NE- moderately bright SE W. Limb 7 days later: NW- moderately bright SW-
Indices
Rz: 74 10cm flux 129 Flare: 17/15.5 Ca: 40.8 Ip: 0 Ia: 2
Solar Regions
15300 N20 (z)
Sunspots
20035 N12 (αp)5 CMP May 19
20041 N18 (αf)2 CMP May 21

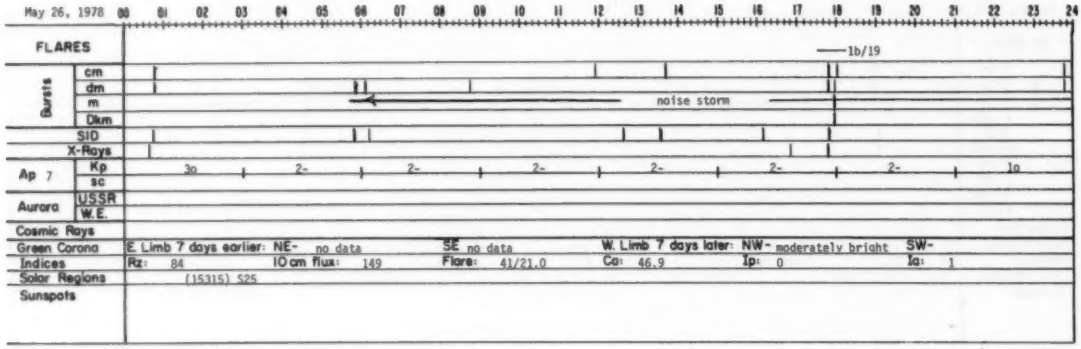

May 21, 1978
FLARES
1f/14
Bursts
cm
dm
m
Dkm
ns
noise storm
SID
X-Rays
Ap 26
Kp
sc
2o
3o
2+
1+
3-
2+
6-
6o
0241(9)
Aurora
USSR
W.E.
Cosmic Rays
Green Corona
E. Limb 7 days earlier: NE- moderately bright SE-
W. Limb 7 days later: NW- moderately bright SW-
Indices
Rz: 73
10cm flux: 130
Flare: 28/16.6
Ca: 42.5
Ip: 0
Ia: 0
Solar Regions
(15324) S19
15304 S18
(15312) N37
Sunspots
(20037) S17 X 1

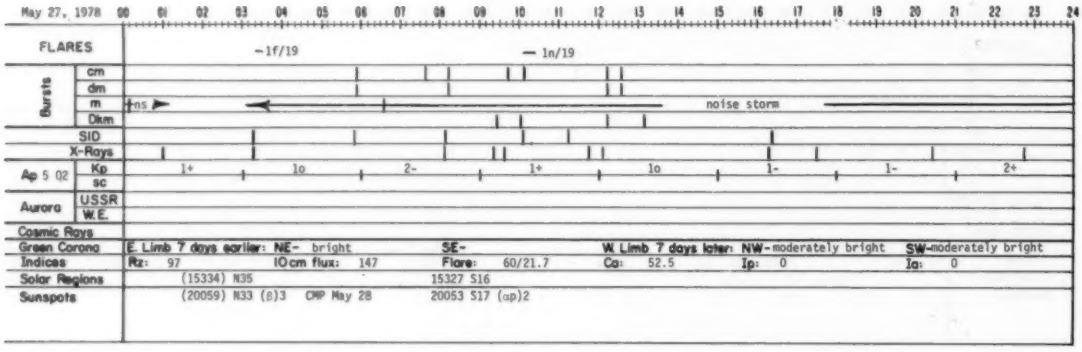

May 22, 1978
FLARES
1b/01
Bursts
cm
dm
m
Dkm
noise storm
SID
X-Rays
Ap 24
Kp
sc
5o
3-
3-
3-
3o
4o
5-
4o
Aurora
USSR
W.E.
Cosmic Rays
Green Corona
E. Limb 7 days earlier: NE- no data
SE no data
W. Limb 7 days later: NW- moderately bright
SW-
Indices
Rz: 73
10cm flux: 132
Flare: 31/21.3
Ca: 38.5
Ip: 0
Ia: 2
Solar Regions
(15317) S01
(15309) S15
(15323) N18
(15325) N18
15313 S32
(20043) S32 (B)2
Sunspots

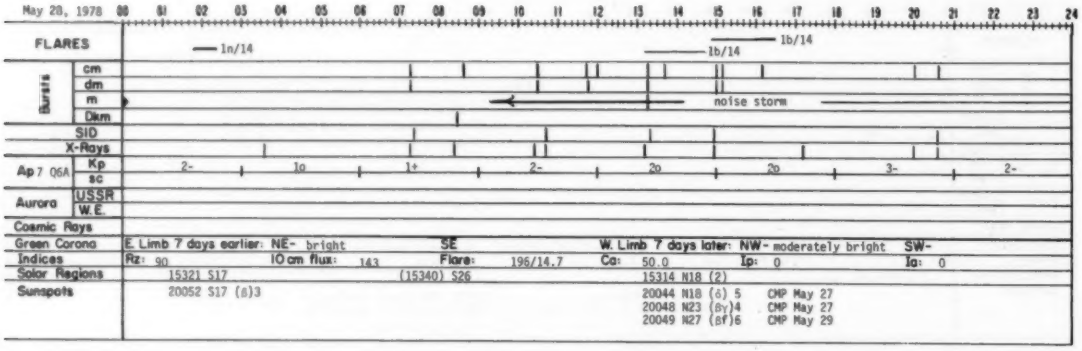

May 23, 1978
FLARES
1n/14
Bursts
cm
dm
m
Dkm
noise storm
SID
X-Rays
Ap 24
Kp
sc
3o
4-
3o
2o
2+
4+
4+
5+
Aurora
USSR
W.E.
Cosmic Rays
Green Corona
E. Limb 7 days earlier: NE- no data
SE- no data
W. Limb 7 days later: NW-
SW-moderately bright
Indices
Rz: 72
10cm flux: 139
Flare: 18/14.0
Ca: 35.1
Ip: 2
Ia: 0
Solar Regions
(15318) S15
Sunspots
S16

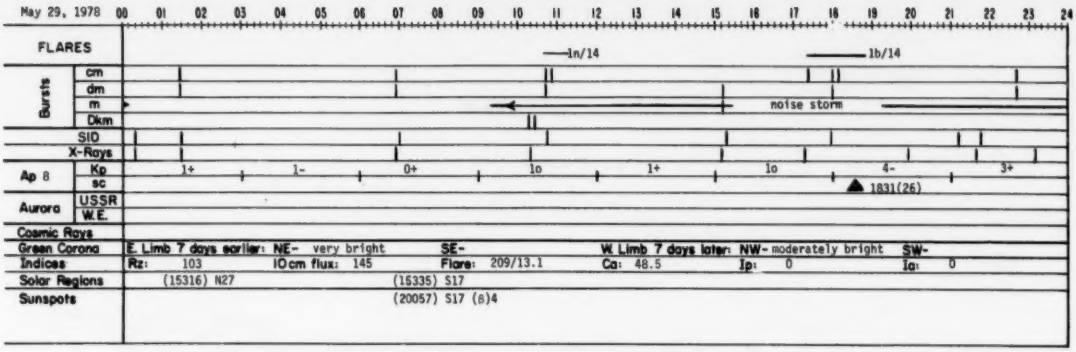

May 24, 1978
FLARES
1n/01-
1b/14
Bursts
cm
dm
m
Dkm
noise storm
SID
X-Rays
Ap 26
Kp
sc
5-
3o
4+
4+
5-
3o
3-
4-
Aurora
USSR
W.E.
Cosmic Rays
Green Corona
E. Limb 7 days earlier: NE- moderately bright
SE moderately bright
W. Limb 7 days later: NW-moderately bright
SW- bright
Indices
Rz: 82
10cm flux: 143
Flare: 39/20.2
Ca: 37.6
Ip: 0
Ia: 3
Solar Regions
15307 N27 (2)
(15320) N28
15305 S30 (2)
Sunspots
(20045) N28 (αp)1
(20046) N28 X 1 CMP May 25
20038 S29 (αp)3 CMP May 23
(20047) S33 (αf)2 CMP May 25

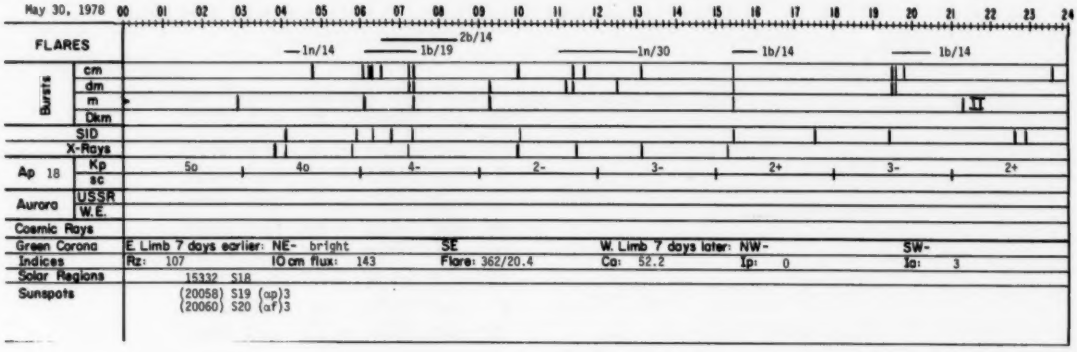

May 25, 1978
FLARES
1n/19
Bursts
cm
dm
m
Dkm
SID
X-Rays
Ap 10
Kp
sc
Aurora
USSR
W.E.
Cosmic Rays
Green Corona
E. Limb 7 days earlier: NE- moderately bright
SE- moderately bright
W. Limb 7 days later: NW- moderately bright
SW- moderately bright
Indices
Rz: 86
10cm flux: 144
Flare: 34/19.1
Ca: 40.8
Ip: 1
Ia: 2
Solar Regions
(15331) S22
15310 S18
Sunspots
(20055) S23 (βp)3
(20042) S18 (β)3

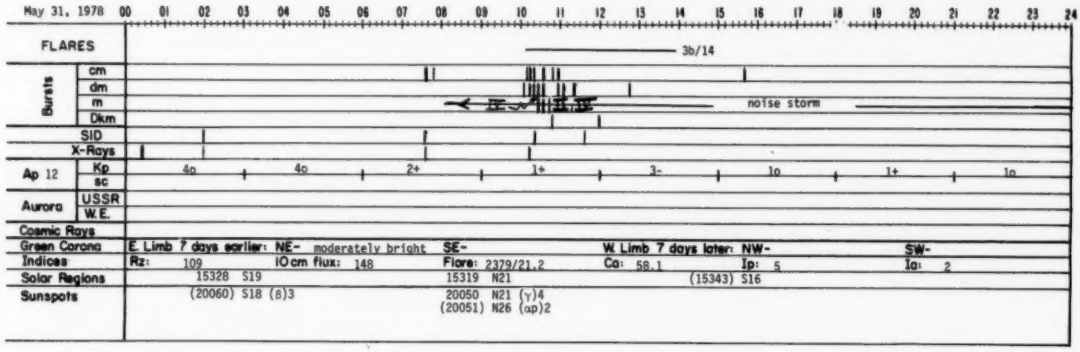

May 26, 1978
FLARES
1b/19
Bursts
cm
dm
m
noise storm
Dkm
SID
X-Rays
Ap 7
Kp
sc
Aurora
USSR
W.E.
Cosmic Rays
Green Corona
E. Limb 7 days earlier: NE- no data
SE no data
W. Limb 7 days later: NW- moderately bright
SW-
Indices
Rz: 84
10cm flux: 149
Flare: 41/21.0
Ca: 46.9
Ip: 0
Ia: 1
Solar Regions
(15315) S25
Sunspots


May 27, 1978
FLARES
1f/19
1n/19
Bursts
cm
dm
m
ns
noise storm
Dkm
SID
X-Rays
Ap 5 Q2
Kp
sc
Aurora
USSR
W.E.
Cosmic Rays
Green Corona
E. Limb 7 days earlier: NE- bright
SE-
W. Limb 7 days later: NW- moderately bright
SW- moderately bright
Indices
Rz: 97
10cm flux: 147
Flare: 60/21.7
Ca: 52.5
Ip: 0
Ia: 0
Solar Regions
(15334) N35
15327 S16
Sunspots
(20059) N33 (β)3 CMP May 28
20053 S17 (αp)2


May 28, 1978
FLARES
1n/14
1b/14
1b/14
Bursts
cm
dm
m
noise storm
Dkm
SID
X-Rays
Ap 7 Q6A
Kp
sc
Aurora
USSR
W.E.
Cosmic Rays
Green Corona
E. Limb 7 days earlier: NE- bright
SE
W. Limb 7 days later: NW- moderately bright
SW-
Indices
Rz: 90
10cm flux: 143
Flare: 196/14.7
Ca: 50.0
Ip: 0
Ia: 0
Solar Regions
15321 S17
(15340) S26
15314 N18 (2)
Sunspots
20052 S17 (β)3
20044 N18 (δ) 5 CMP May 27
20048 N23 (βγ)4 CMP May 27
20049 N27 (βf)6 CMP May 29







REGIONAL FLARE INDEX
INCLUDES ALL FLARES

HC MATH PLAGE NO.	LAT	CMP DATE	DATE FIRST FLARE	DATE LAST FLARE	FLARE-INDEX SUM	FLARE-INDEX MEAN	TOTAL NO. OF FLARES
15270	N24	78/05/04.7	78/04/27	78/05/02	4.22	.70	2
15280	S27	78/05/07.9	78/04/30	78/05/14	22.07	1.47	14
15282	N18	78/05/07.9	78/05/02	78/05/08	22.36	3.19	11
15292	S23	78/05/11.8	78/05/17	78/05/17	3.16	3.16	3
15291	N17	78/05/12.2	78/05/05	78/05/17	140.93	10.84	11
15293	S33	78/05/12.3	78/05/12	78/05/12	3.38	3.38	1
15294	N19	78/05/14.4	78/05/10	78/05/21	283.54	16.96	8
15296	S20	78/05/14.8	78/05/13	78/05/21	172.43	19.16	31
15298	N21	78/05/17.9	78/05/13	78/05/18	54.82	9.14	13
15301	S27	78/05/19.6	78/05/14	78/05/24	55.42	5.04	11
15300	N19	78/05/19.9	78/05/14	78/05/25	57.77	4.81	9

Miscellaneous Data

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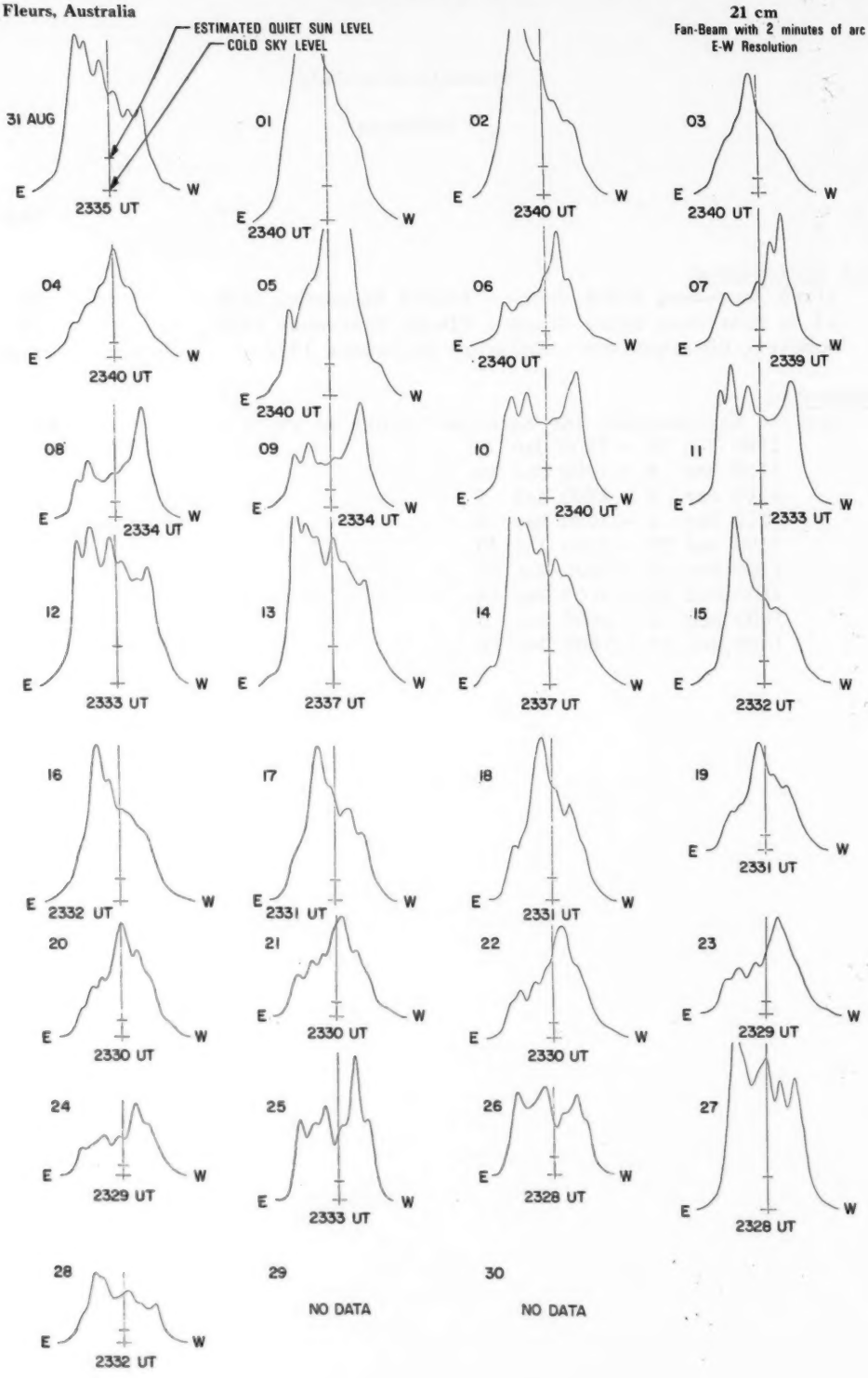
1200 Mar 8 - 1200 Mar 10	
1200 Apr 6 - 1200 Apr 8	
1200 May 1 - 1200 May 3	
2100 Jul 28 - 2100 Jul 30	
1200 Sep 19 - 1200 Sep 23	
2100 Oct 26 - 2100 Oct 28	
1800 Dec 1 - 1800 Dec 3	
1800 Dec 10 - 1800 Dec 12	

EAST-WEST SOLAR SCANS

SEPTEMBER 1978

Fleurs, Australia

21 cm
Fan-Beam with 2 minutes of arc
E-W Resolution



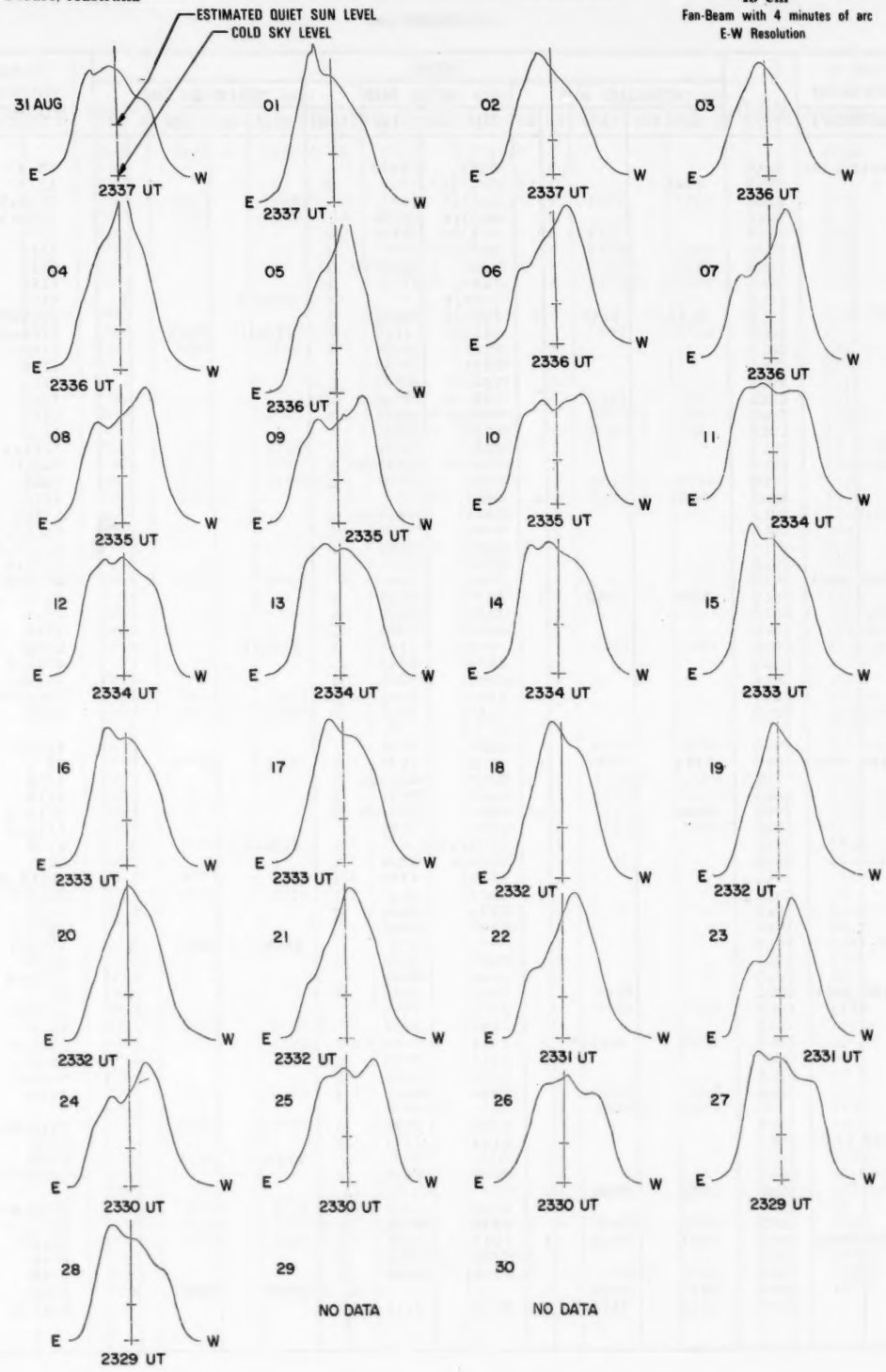
EAST-WEST SOLAR SCANS

SEPTEMBER 1978

Fleurs, Australia

43 cm

Fan-Beam with 4 minutes of arc E-W Resolution



SOLAR RADIO EMISSION
SPECTRAL OBSERVATIONS

SEPTEMBER 1978

SEP 1978	TIMES OF OBSERVATION START UT	TIMES OF OBSERVATION END UT	STATION MONTH 09	EVENTS DECIMETRIC BAND START UT	DECIMETRIC BAND END UT	DECIMETRIC BAND INT	METRIC BAND START UT	METRIC BAND END UT	METRIC BAND INT	DEKAMETRIC BAND START UT	DEKAMETRIC BAND END UT	DEKAMETRIC BAND INT	SPECTRAL TYPE
01	0000	0732	CULG				0000	0439					IS,W
			CULG	0007.5		1	0007.5		1				IIIB
			CULG				0008.5						IIIB,W
			CULG				0037.5	0125					IIIN,W
			CULG				0037.5	0038	2				IIIG
			CULG				0038.5		2				IIIB
			CULG				0049	0049.5	1				IIIG
			CULG				0055		1				IIIB
			CULG				0058.5		1	0058.5		1	IIIB
			CULG	0100.5	0102	1	0100.5	0102	1				IIIG,U
			CULG				0108.5	0109	2	0108.5	0109	2	IIIG,U
			CULG				0123	0124	1				IIIG,U
			CULG				0206	0709	1				IIIN
			CULG				0232.5	0233	1				IIIG
			CULG				0331.5	0332.5	2				IIIG
			CULG				0435.5	0436	2				IIIG
			CULG				0439	0732					IN,W
			CULG				0522	0732					IIIS,W
			CULG				0530.5	0533.5	1				UNCLF
			CULG				0541	0542	1				IIIG
			CULG	0623		1	0623		2				IIIB
			CULG				0624	0627.5	2				IIIGG
			CULG				0624	0628	1				UNCLF,SLOW
			CULG				0630	0631	1				UNCLF,SLOW
			CULG				0703		2				IIIG,U
	2033	2400	CULG				2033	2113					IIIS,W
			CULG	2055	2400	1	2033	2400	1				IS
			CULG				2113	2230	1				IIIS
			CULG				2113	2300	2				IIIN
			CULG				2153	2154	1	2153.5		1	UNCLF
			CULG				2230	2332					IIIS,W
			CULG				2255	2300	1				IIIGG
			CULG				2255	2300	1				UNCLF
			CULG				2332	2400	1				IIIS
02			CULG				0000	0135					IIIS,W
	0000	0732	CULG	0000	0709	1	0000	0630	1				IS
			CULG				0117	0119.5	1				IIIG
			CULG				0135	0237	1				IIIS
			CULG	0231		1	0231	0231.5	2				IIIG,U
			CULG				0237	0330					IIIS,W
			CULG				0238.5		1	0238.5		1	IIIB
			CULG				0319.5	0320	1				DC
			CULG				0325	0330	1				UNCLF,DC
			CULG				0330	0547	1				IIIS
			CULG				0333	0640	2				IIIN
			CULG				0547	0607	2				IIIS,C
			CULG							0554	0601	1	S.W.F.
			CULG				0607	0646	1				IIIS
			CULG				0646	0730					IIIN,W
	2033	2400	CULG				2033	2053	1				IS
			CULG				2045	2318					IIIN,W
			CULG				2053	2310					IN,W
			CULG	2209	2209.5	1	2209	2209.5	2				IIIG,U
			CULG				2310	2400	1				IS,C
			CULG				2318	2400	1				N,RSDP
			CULG				2318	2400	1				IIIN
03			CULG				0000	0120	1				IS,C,DC
	0000	0731	CULG				0000	0050	2				IIIS
			CULG							0023	0027	1	IIIN
			CULG				0050	0115	1				IIIS
			CULG	0110	0731	1							IN
			CULG				0115	0731					IIIN,W
			CULG				0238	0731	1				IS
	2033	2400	CULG	2033	2400	1	2033	2400	1				IS,DC
			CULG				2033	2400	1				IIIS
			CULG				2043.5	2400	2				IIIN
			CULG	2110	2400	1				2248	2400	1	IIIN
			CULG	2111	2112.5	1	2111	2112.5	3				IIIG,V

SOLAR RADIO EMISSION
SPECTRAL OBSERVATIONS

SEPTEMBER 1978

SEP 1978	TIMES OF OBSERVATION		STATION	EVENTS									SPECTRAL TYPE
				DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND			
	START UT	END UT		START UT	END UT	INT	START UT	END UT	INT	START UT	END UT	INT	
03			CULG	2120.5	2122	1	2119	2122.5	3				IIIGG
			CULG				2135	2255	1				IS,C
			CULG				2156.5	2157.5	2				IIIG,U
			CULG	2223	2223.5	2	2223	2224.5	3	2223	2223.5	2	IIIG
			CULG	2255	2345	2	2255	2345	2				IS,C
			CULG	2311		1	2311		2	2311		2	IIIB
			CULG				2324.5	2326	2	2325	2326	2	IIIG
			CULG				2328.5	2329.5	2	2328.5	2329.5	2	IIIG
			CULG				2330.5	2331	2	2330.5	2331	1	IIIG
04	0000	0730	CULG				0000	0730	1				N,RS,DP
			CULG	0000	0730	1				0000	0730	1	IIIN
			CULG	0000	0059	1	0000	0059	1				IS,DC
			CULG				0000	0730	2				IIIN
			CULG				0000	0230	1				IIIS
			CULG				0004	0005	2	0004	0005	2	IIIG
			CULG				0013.5	0015	3	0013.5	0015	2	IIIGG
			CULG				0055.5	0056	2	0055.5	0056	2	IIIG
			CULG	0059	0130	1	0059	0130	2				IS,C,DC
			CULG	0130	0730	1	0130	0730	1				IS,C,DC
			CULG	0139.5	0140.5	1	0139.5	0140.5	2	0139.5	0140.5	2	IIIG
			CULG	0221.5		2	0221.5	0222	3	0221.5	0222	3	IIIG,V
			CULG				0230	0657	2				IS,C,DC
			CULG				0230	0657	2				IIIS
			CULG				0657.5	0658.5	3				IIIG
			CULG				0658	0730	1				IIIS
	2032	2400	CULG	2032	2400	1							IS,DC
			CULG				2032	2400	2				IIIS
			CULG				2032	2400	2				IS,C,DC
			CULG				2053	2202	2				IIIG,N
			CULG							2228	2400	1	IIIG,N
05			CULG				0000	0518	2				IS,C
	0000	0730	CULG	0000	0040	1							IS,DC
			CULG	0000	0525								IIIN,W
			CULG				0000	0730	2				IIIS
			CULG							0022	0525	1	IIIG,N
			CULG	0040	0705	1							IS
			CULG				0124	0124.5	3	0124.5	0125	3	IIIG
			CULG				0415.5	0416	3	0416	0417.5	3	IIIG,V
			CULG				0421	0421.5	2	0421	0421.5	1	IIIB,U
			CULG				0430.5	0432	2	0430.5	0431.5	2	IIIG,V
			CULG	0433.5		1	0433.5		1				IIIB
			CULG				0518	0730	1				IS,C,DC
			CULG	0705	0730	2							IS
	2031	2400	CULG	2031	2230	1							IS
			CULG				2031	2400	1				IIIS
			CULG				2031	2400	2				IS,C
			CULG				2037	2400	1				N,RS,DP
			CULG				2037	2400	2				IIIN
			CULG				2107		1				DP
			CULG							2107		1	RS,DP
			CULG							2108	2400	2	IIIN
			CULG	2125	2126.5	2							IIIG
			CULG	2230	2321	1							IS
			CULG				2231		1				DP
			CULG				2238.5		1				DP
			CULG	2243	2253	2	2242.5	2253	3	2243	2253	3	IIIS
			CULG				2320.5	2321	3	2320.5	2321	3	IIIG
			CULG	2321	2400								IS,W
06			CULG				0000	0730	1				IIIS
	0000	0730	CULG				0000	0730	2				IS,C,DC
			CULG				0001	0456	2	0001	0456	2	IIIG,N
			CULG	0012	0730	1							IS
			CULG	0022	0022.5	2	0022	0022.5	2	0022	0023	2	IIIG
			CULG	0131	0131.5	2							FAST DRIFT
			CULG				0200.5	0201.5	1				UNCLF
			CULG				0238.5	0241.5	2	0238.5	0241.5	2	IIIGG
			CULG	0303	0303.5	2							IIIG

SOLAR RADIO EMISSION
SPECTRAL OBSERVATIONS
SEPTEMBER 1978

SEP 1978	TIMES OF OBSERVATION		STATION	EVENTS									SPECTRAL TYPE
				DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND			
	START UT	END UT		START UT	END UT	INT	START UT	END UT	INT	START UT	END UT	INT	
06			CULG	0306.5	0307	2							IIIG
			CULG				0341	0342.5	2				DC
			CULG	0508.5	0509	2	0508.5	0509	1				IIIG
			CULG	0518	0518.5	1	0518	0522	2				IIIG,U
			CULG				0537	0632	2				IIIS
			CULG							0544	0632	2	IIIG,N
			CULG				0644.5		2				IIIB
			CULG	0649	0650	3	0649	0650	1				IIIG
			CULG	0653	0654	3	0652	0654	2				IIIG
			CULG	0710		2							IIIG
			CULG	0712.5	0713.5	2	0710.5	0714.5	2				IIIGG
			CULG				2030	2400	1				IS,C,DC
	2030	2400	CULG	2030	2400								IS,W
			CULG				2030	2400	1				IIIS
			CULG	2039.5	2040.5	1							IIIC
			CULG	2239	2239.5	1	2239	2240	3	2239.5	2240	3	IIIG,V,U
			CULG				2349	2349.5	2	2349	2349.5	1	IIIG
07			CULG				0000	0730	1				IIIN
			CULG				0000	0730					IIIS,W
			CULG				0000	0730	1				IS,DC
	0000	0730	CULG	0000	0730								IS,W
			CULG	0002	0002.5	3	0002	0002.5	2				IIIG
			CULG				0346	0349.5	1	0346	0347.5	1	IIIGG
			CULG				0534	0535	2	0534.5	0535	1	IIIG
			CULG				0542.5	0705	2				IIIG,N
			CULG	0549	0551	1	0549	0551	3	0549	0550.5	3	IIIG
			CULG	0552.5		1	0552.5		3	0552.5		1	IIIB
			CULG	0704.5	0705		0704.5	0705	3	0704.5	0705	3	IIIG
			CULG	0721.5		1	0721.5		3	0721.5		2	IIIB
			CULG				0722.5	0723.5	2				IIIG
	2030	2400	CULG	2030	2123	1	2030	2400	1				IS,DC
			CULG				2030	2400					IIIS,W
			CULG	2138.5	2140.5	2	2139.5	2141	2				IIIG
			CULG	2208	2208.5	1	2208	2208.5	1				IIIG
			CULG	2228.5	2229	3	2228.5	2229	3				IIIG
			CULG				2233.5		1				IIIB
			CULG							2315	2325	1	S.W.F.
			CULG				2330.5	2331.5	1				UNCLF
			CULG				2333	2400	3	2337	2356.5	3	IIH B
			CULG	2334.5	2355	3	2337	2400	3				IVF
08	0000	0730	CULG				0000	0004.5	2				II
			CULG	0006	0025	2	0000	0033.5	2				IVF
			CULG				0031	0730					IIIS,W
			CULG				0035	0148	1				IS
			CULG				0043	0646	1				IIIN
			CULG	0103	0103.5	2	0103	0103.5	2				IIIB
			CULG				0104.5	0105	2	0104.5	0105	1	IIIG
			CULG	0130.5	0730	1	0148	0214	1				IS,DC
			CULG				0148		2				IIIB
			CULG				0158	0158.5	2				IIIG
			CULG	0209.5		1							IIIB
			CULG				0214	0324	1				IS,DC
			CULG				0323.5	0324	2				IIIB
			CULG				0324	0527	1				IS,DC
			CULG				0325.5		2				IIIB
			CULG	0326.5	0327	1	0326.5	0327	1				IIIG
			CULG	0353.5	0354	2							IIIG
			CULG	0358	0358.5	2	0358	0358.5	2	0358	0358.5	1	IIIG
			CULG				0440.5		1				IIIB
			CULG				0451	0507					POSS II,W
			CULG				0527	0730	1				IS
			CULG				0646	0704	1				IIIS
	2030	2400	CULG				2030	2400					IS,DC
			CULG				2030	2400					IIIN,W
			CULG	2056	2206	1							IN
			CULG				2108.5	2110	2				IIIG
09	0000	0730	CULG				0000	0200	1				IS,DC

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SEP 1978	TIMES OF OBSERVATION		STATION	EVENTS									SPECTRAL TYPE
				DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND			
	START UT	END UT		START UT	END UT	INT	START UT	END UT	INT	START UT	END UT	INT	
09			CULG				0000	0730					IIIN,W
			CULG				0200	0441	1				IS
			CULG				0212	0213.5	2	0213	0213.5	1	IIIG
			CULG				0441	0730					IS,W
			CULG	0451	0451.5	1	0451	0452	3	0451	0451.5	2	IIIG,V
			CULG				0509	0605	1				I,DC
			CULG				0513.5	0514.5	1				IIIG
			CULG				0628	0628.5	2				IIIB
			CULG				0630	0634	1				IIIN
			CULG				0636		2				IIIB
			CULG				2031	2301					IN,W
	2031	2219	CULG				2031	2219					IIIS,W
			CULG				2052.5		1				IIIB,U
	2224	2400	CULG				2248	2253	1				DC
			CULG	2259.5	2230		2259.5	2230					IIIG,W
			CULG	2310	2310.5	1	2310	2310.5	1				IIIG
			CULG	2356	2356.5	1	2356	2356.5	1	2356	2356.5	1	IIIG
10	0000	0729	CULG				0011.5	0729					IIIN,W
			CULG				0704.5	0705					IIIG,W
	2029	2400	CULG				2029	2400					IN,W
			CULG				2031	2400					IIIN,W
			CULG				2039	2039.5	1				IIIB,U
			CULG	2252	2253		2252	2253					IIIG,W
11	0000	0729	CULG				0000	0729					IIIN,W
			CULG				0000	0145					IN,W
	2029	2400	CULG	2029	2248	1	2029	2400	1				IS
			CULG				2029	2400					IIIS,W
			CULG				2147	2147.5	1				IIIB,U
			CULG				2230	2309	1				IS,DC
12	0000	0728	CULG				0000	0728					IIIN,W
			CULG				0000	0450	1				IN
			CULG				0124.5	0125.5	1				DC
			CULG				2028	2400	1				IS,DC
	2028	2400	CULG				2028	2149					IIIS,W
			CULG				2149	2400					IIIN,W
			CULG				2249.5	2251	1				IIIG
13			CULG				0003	0703					IIIN,W
	0000	0728	CULG	0256	0333		0000	0221					IS,W
	2028	2400	CULG				2033	2119					IN,W
			CULG				203E	2036.5					IIIG,W
			CULG				2106						IIIB,W
			CULG				2108.5	2109	1				IIIG
			CULG				2109	2110					IIIG,W
			CULG				2124.5						IIIB,W
			CULG	2242	2243.5		2242	2244					IIIG,W
			CULG				2318.5						IIIB,W
14	0000	0727	CULG				0003	0235					IIIN,W
			CULG				0610.5	0612	1				IIIG,U
	2027	2400	CULG				2206.5	2324.5					IIIN,W
			CULG				2326	2327	1	2326.5	2327	1	IIIG
			CULG				2327.5	2328	2	2327.5	2328	2	IIIG
			CULG				2330.5	2331.5	1				IIIG
			CULG				2349.5	2351.5	1	2349.5	2351.5	1	IIIG
15	0000	0727	CULG				0119.5	0120					IIIG,W
			CULG				0124.5		1				IIIB
			CULG	0338									IIIB,W
			CULG				0536.5	0658					IIIN,W
			CULG	0549.5			0549.5						IIIG,W
			CULG	0550.5	0551	1	0550.5	0551	1				IIIG
			CULG	0555.5	0557	1							IIIG
			CULG				0555.5	0556					IIIG,W
			CULG				0613	0614	1				IIIG
	2027	2400	CULG				2037.5						IIIB,W
			CULG	2050.5		1							IIIB

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				DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND			
	START UT	END UT		START UT	END UT	INT	START UT	END UT	INT	START UT	END UT	INT	
15			CULG	2051	2051.5	3							IIIG
			CULG	2132	2132.5	3							IIIG
			CULG				2154	2155					IIIG,W
			CULG				2157.5	2159					IIIG,W
			CULG				2207.5	2211					IIIG,W
			CULG	2210.5	2211	3							IIIG
			CULG				2224	2306					IN,W
16	0000	0727	CULG										
	2027	2400	CULG	2114	2200	1	2127	2158	1				IS
			CULG				2158	2245					IS,W
			CULG	2200	2250	1							IS
			CULG	2246.5		1							IIIB
			CULG				2258.5	2300	2	2258.5	2300	2	IIIG
			CULG				2301	2301.5					IIIG,W
			CULG				2324.5	2325.5	2	2324.5	2325	2	IIIG
			CULG				2328	2400	1				IS
			CULG				2329	2329.5					IIIG,W
			CULG				2344.5	2345	1				IIIG
			CULG				2346.5	2347.5	2	2347	2347.5	1	IIIG
17	0000	0726	CULG				0000	0007	1				IS
			CULG				0004	0307					IIIN,W
			CULG				0006.5	0007		0006.5	0007		IIIB,W
			CULG				0007	0056					IS,W
			CULG	0103	0129	1							IS
			CULG	0140.5	0141	3	0140.5	0141.5	3				IIIG
			CULG	0231		2	0231	0231.5	3	0231.5	0232	3	IIIG,V
			CULG				0332.5	0435					IN,W
			CULG				0641.5	0643	1				IIIGG
			CULG				0653.5	0654.5	3				IIIG
			CULG				0708.5	0709	2				IIIG
	2026	2400	CULG				2026	2118					IIIN,W
			CULG				2228.5						IIIB,W
			CULG				2332.5	2333	1				IIIG
18	0000	0715	CULG				0016	0620					IIIN,W
			CULG	0019.5	0020.5	1	0019.5		1				IIIG
			CULG				0149.5	0150.5	2				IIIG
			CULG	0157.5	0158	1	0157.5	0158.5	3	0157.5	0158	3	IIIG,V
			CULG				0213.5		1				IIIB
			CULG				0236		1				IIIB
			CULG				0253	0253.5	1				IIIG
			CULG				0524	0525	1				IIIG
			CULG	0531	0548	1							IS
			CULG				0620	0715					IIIS,W
			CULG	0702	0703	2	0702.5	0703	1				IIIG
	2026	2400	CULG				2026	2129					IIIS,W
			CULG				2030	2133	1				IS
			CULG				2129	2400					IIIN,W
			CULG				2158	2158.5	3				IIIG
			CULG				2337	2338	2				IIIG
19	0000	0725	CULG				0015.5	0018.5	1				IIIGG
			CULG				0018.5	0022	2				IIIGG,U
			CULG				0027	0029.5					IIIG,W
			CULG	0027		1							IIIB
			CULG				0124	0725					IIIN,W
			CULG				0140	0141.5	3				IIIGG,U
			CULG				0157.5		1	0157.5		2	IIIB
			CULG				0203.5		1				IIIB
			CULG	0210			0210						IIIB,W
			CULG				0212.5	0213.5	2	0212.5	0213.5	2	IIIG
			CULG				0234	0246					IS,W
			CULG	0238	0238.5	1							IIIG
			CULG	0249	0250.5	1							IIIG
			CULG	0256	0256.5		0256	0256.5					IIIG,W
			CULG				0258	0258.5	1				IIIG
			CULG				0313.5	0314.5	2				IIIG
			CULG				0354.5	0355	1				IIIG,U

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				DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND			
	START UT	END UT		START UT	END UT	INT	START UT	END UT	INT	START UT	END UT	INT	
19			CULG				0354		1				IIIB,U
			CULG				0415	0725	1				IS
			CULG	0459	0601	1							IN
	2025	2400	CULG				2028	2333					IIIN,W
			CULG				2053	2101					IS,W
			CULG	2059	2251	1							IS
20	0000	0725	CULG				0038	0150	1				IS
			CULG				0105	0157					IIIN,W
			CULG				0252						IIIB,W
			CULG				0403.5						IIIB,W
			CULG				0413		1				IIIB
			CULG				0459		1				IIIB
			CULG				0707.5						IIIB,W
	2025	2147	CULG				2027	2147					IIIN,W
			CULG				2104.5	2105	2				IIIG
			CULG	2104	2136	1							IN
			CULG				2107.5		1				IIIB
			CULG				2123.5		2				IIIB
			CULG				2127		2				IIIB
			CULG				2137		1				IIIB
			CULG				2143		1				IIIG
	2203	2400	CULG										
			CULG				2208	2337					IIIN,W
			CULG	2210.5	2319								IS,W
			CULG	2217		1	2217		1				IIIB
			CULG				2228	2233.5					IIIGG,W
			CULG				2240		1	2240		1	IIIB
			CULG				2241		1				IIIB
			CULG				2243.5	2244.5	2				IIIG
			CULG	2319	2341	1							IS
			CULG				2321.5	2322.5	1				IIIG
			CULG				2337	2400					IIIS,W
21			CULG	0000	0248								IS,W
	0000	0725	CULG				0000	0115					IIIS,W
			CULG				0016.5		1				IIIB
			CULG				0032.5		1				IIIB
			CULG				0033		2	0033		1	IIIB,U
			CULG				0115	0411					IIIN,W
			CULG	0248	0725	1	0237	0725	1				IS
			CULG	0313	0314	1							IIIG
			CULG				0331	0332	3	0331	0332	3	IIIG,V
			CULG	0410	0414	1							IIIG
			CULG				0411	0411.5	3	0411.5	0412	2	IIIB,V
			CULG				0411	0725	1				IIIS
			CULG	0411	0505	2	0412.5	0725	2	0500	0725	1	IV
			CULG				0412	0413.5	2				IIIG
			CULG							0414	0445	1	S.W.F.
			CULG				0415.5	0435	2				II
			CULG				0415.5	0416.5	2	0415.5	0416.5	1	IIIG
			CULG							0415	0435	2	IIIG,N
			CULG				0418	0418.5	1	0418	0418.5	1	IIIG
			CULG				0423.5	0424	2	0423.5	0424	2	IIIG
			CULG	0628	0658	2							IS
	2025	2400	CULG				2025	2400	1				IIIS
			CULG				2025	2400	1				IS,DC
			CULG	2049.5		1							IIIB
			CULG	2108	2400								IS,W
			CULG				2152	2327	1				IIIN
22			CULG	0000	0725								IS,W
	0000	0725	CULG				0000	0348	1				IS,DC
			CULG				0000	0725					IIIS,W
			CULG				0137.5		2	0137.5		1	IIIB
			CULG				0348	0429	1				IS,DC
			CULG				0429	0500	2				IS,C,DC
			CULG				0500	0615	2				IS,DC
			CULG				0615	0725	1				IS
			CULG				0702		1				UNCLF,RS

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				DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND			
	START UT	END UT		START UT	END UT	INT	START UT	END UT	INT	START UT	END UT	INT	
22			CULG				0703		1				IIIB
			CULG				2025	2400	1				IIIN
			CULG				2025	2400					IIIS,W
	2025	2400	CULG				2025	2209	1				IS
			CULG				2142.5	2143.5	1				UNCLF
			CULG				2209	2400	1				IN
23	0000	0724	CULG				0000	0215					IIIS,W
			CULG				0000	0215	1				IN
			CULG				0003	0724	1				IIIN
			CULG				0122.5	0123	2	0122.5	0123	1	IIIB
			CULG	0153	0154	1							IIIG,RS
			CULG				0207	0207.5	2	0207	0207.5	1	IIIB
			CULG				0215	0354	2				IS
			CULG				0215	0350	2				IIIS
			CULG							0222	0356	1	IIIN
			CULG	0236.5	0238	1							FAST DRIFT
			CULG	0238	0724								IN,W
			CULG				0328	0334	2				IIIS
			CULG				0350	0724					IIIS,W
			CULG				0354	0715	1				IS
			CULG				0715	0724	1				IS,DC
			CULG	0720.5	0721	2	0720.5	0721	2				IIIG
			CULG	0723.5	0724	1							FAST DRIFT
			CULG				2025	2400					IIIS,W
	2025	2400	CULG				2025	2400	1				IIIN
			CULG				2025	2400	1				N,RS,DP
			CULG				2025	2400	1				IS,DC
			CULG				2343		2	2343		1	IIIB
24	0000	0724	CULG				0000	0724	1				IIIN
			CULG				0000	0724					IS,W
			CULG				0000	0724					IIIS,W
			CULG				0006	0712	1				N,RS,DP
			CULG	0046.5	0047	1							FAST DRIFT
			CULG				0159	0159.5	1	0159	0159.5	1	IIIG
			CULG				0402	0402.5	1				IIIB,U
			CULG				0641.5	0642.5	2				IIIG
	2025	2400	CULG				2025	2258	1				IS,DC
			CULG				2025	2026	3				IIIG,V,U
			CULG				2025	2335					IIIS,W
			CULG				2030		2				IIIB
			CULG				2033	2121	1				IIIN
			CULG				2056.5		2				IIIB
			CULG	2108.5	2238	2	2116	2315	2				IV
			CULG				2122	2141	3				II
			CULG	2150	2208	1	2335	2400	1				IIIN
25	0000	0724	CULG				0006	0100	1				IIIN
			CULG				0100	0451					IIIS,W
			CULG				0115	0453	1				IS
			CULG							0150	0352		IIIN,W
			CULG				0153		2	0153		1	IIIB
			CULG				0351.5	0352	2				IIIG
			CULG				0518	0724					IIIN,W
			CULG	0610	0612	1							IIIGG
			CULG				0611.5	0612	1				IIIG
			CULG				0635	0724	1				IN
			CULG				0704.5		1				IIIB
	2024	2400	CULG				2024	2128	1				IS
			CULG				2024	2124					IIIS,W
			CULG				2046.5	2047	1				IIIG,U
			CULG				2128	2400					IN,W
			CULG				2132	2349					IIIN,W
			CULG				2349	2400					IIIS,W
			CULG	2352	2400								IS,W
26			CULG				0000	0326					IIIS,W
	0000	0723	CULG	0000	0028	1	0000	0552	1				IS
			CULG				0000	0723	1				IIIN

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SEP 1978	TIMES OF OBSERVATION		STATION	EVENTS									SPECTRAL TYPE
				DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND			
	START UT	END UT		START UT	END UT	INT	START UT	END UT	INT	START UT	END UT	INT	
26			CULG				0016	0235	1				IS,DC
			CULG	0028	0158								IN,W
			CULG	0057.5	0058	2	0057.5	0058	2				IIIG
			CULG				0245.5	0246	2				IIIG,U
			CULG	0338.5	0339	1	0338.5	0339	1				IIIG
			CULG	0341	0342.5	1	0341	0342.5	2				IIIGG
			CULG				0347	0723					IIIN,W
			CULG	0423	0423.5	1							IIIG
			CULG				0437.5		1	0437.5		1	IIIB
			CULG	0453	0617								IS,W
			CULG				0552	0702					IN,W
			CULG	0552	0552.5	1	0552	0552.5	1				IIIG
			CULG	0604.5	0605	1	0604.5	0605	2				IIIG
			CULG	0630.5	0631.5	1	0630.5	0632	2				IIIGG
			CULG				0717.5	0718.5	2				IIIG
			CULG				2023	2400	1				IS
			CULG				2023	2121	1				N,RS,DP
	2023	2400	CULG				2023	2110	1				IIIS
			CULG	2037	2049	1	2037.5	2041	3	2038	2041	3	IIIGG
			CULG				2051.5	2053	3				IIIGG
			CULG				2052	2054.5	2				UNCLF
			CULG				2110	2400	2				IIIS
			CULG	2122	2244	2	2122	2400	2				IS,C
			CULG							2203	2338	1	IIIN
			CULG	2217.5		1							IIIB
27			CULG				0000	0126	1				IIIS
	0000	0723	CULG				0000	0554	2				IS,DC,C
			CULG	0000	0200								IN,W
			CULG				0126.5	0144	2				IIIS
			CULG				0126.5	0127.5	2	0127	0128	2	IIIG
			CULG				0143.5		3	0143.5		2	IIIB
			CULG				0156	0723					IIIS,W
			CULG				0335		2	0335.5		2	IIIB
			CULG				0615	0718	1				N,RS,DP
			CULG	0658	0723	1	0554	0723	1				IS
			CULG				2022	2400					IIIN,W
	2022	2400	CULG				2022	2400	1				IS
			CULG				2105.5		1				IIIB
			CULG				2109	2110	1				IIIG
			CULG							2211.5	2212	1	IIIB
			CULG				2220.5	2221	1	2220.5	2221	1	IIIG
28			CULG				0000	0723					IIIN,W
	0000	0723	CULG				0000	0336	1				IS
			CULG				0129	0129.5	1				IIIG
			CULG				0312.5	0313	1	0312.5	0313	1	IIIG
			CULG				0322.5	0323	2	0323	0323.5	2	IIIG
			CULG	0333.5	0334.5	1	0333	0335	2	0334.5	0335	2	IIIGG
			CULG	0434	0436.5	2	0434	0437	3	0434	0436.5	3	IIIGG,V
			CULG				0437.5	0438	1				IIIG
			CULG				0557	0559.5	2				IIIG
			CULG	0632	0633.5	1	0632	0634	3				IIIGG
			CULG				0637.5		2				IIIB
			CULG				0643	0714	1				IIIN
	2023	2400	CULG				2031	2056					IIIS,W
			CULG				2039	2058					IS,W
			CULG	2242	2242.5	1	2242	2242.5	1				IIIB
29	0000	0722	CULG				0047	0048.5	1	0047.5	0048	1	IIIG
			CULG				0148.5	0149	2	0148.5	0149	1	IIIG
			CULG				0150						IIIB,W
			CULG				0359	0400					IIIG,W
	2126	2400	CULG				2126	2400					IIIN,W
			CULG	2145.5	2245	1							IN
			CULG				2152	2400					IN,W
			CULG	2339.5			2339.5	2340					IIIG,W
30	0000	0722	CULG				0415.5	0416.5					IIIG,W
			CULG				0658.5						IIIG,W

SOLAR RADIO EMISSION
SPECTRAL OBSERVATIONS

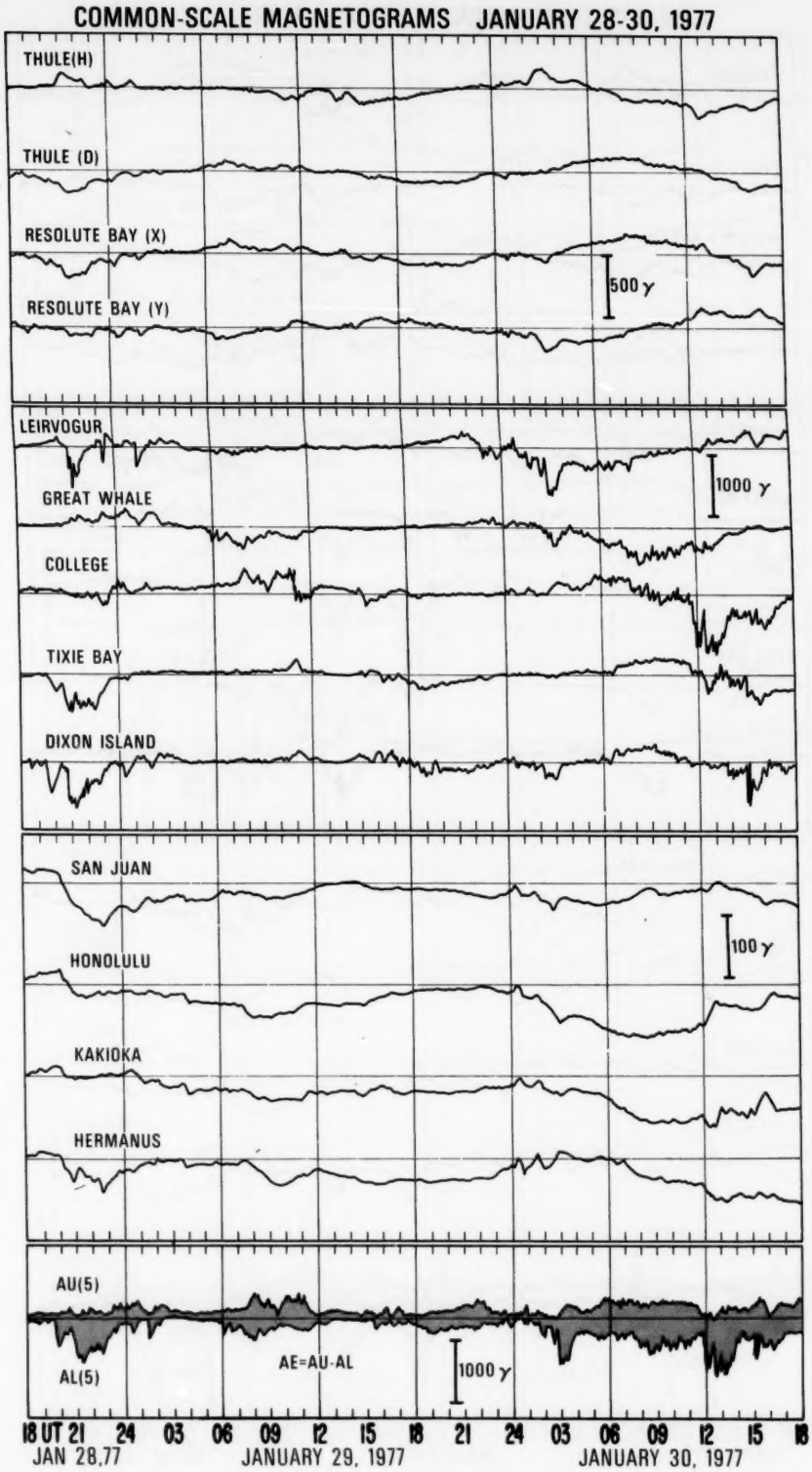
SEPTEMBER 1978

SEP 1978	TIMES OF OBSERVATION		STATION	EVENTS									SPECTRAL TYPE
				DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND			
	START UT	END UT		START UT	END UT	INT	START UT	END UT	INT	START UT	END UT	INT	
30	2027	2400	CULG				0721.5	0722					IIIG,W
			CULG				2027	2056					IIIN,W
			CULG	2201.5	2202.5	1	2201.5	2203	2	2201.5	2202.5	2	IIIGG

The symbols used in connection with the spectral type in describing the important bursts are as follows:

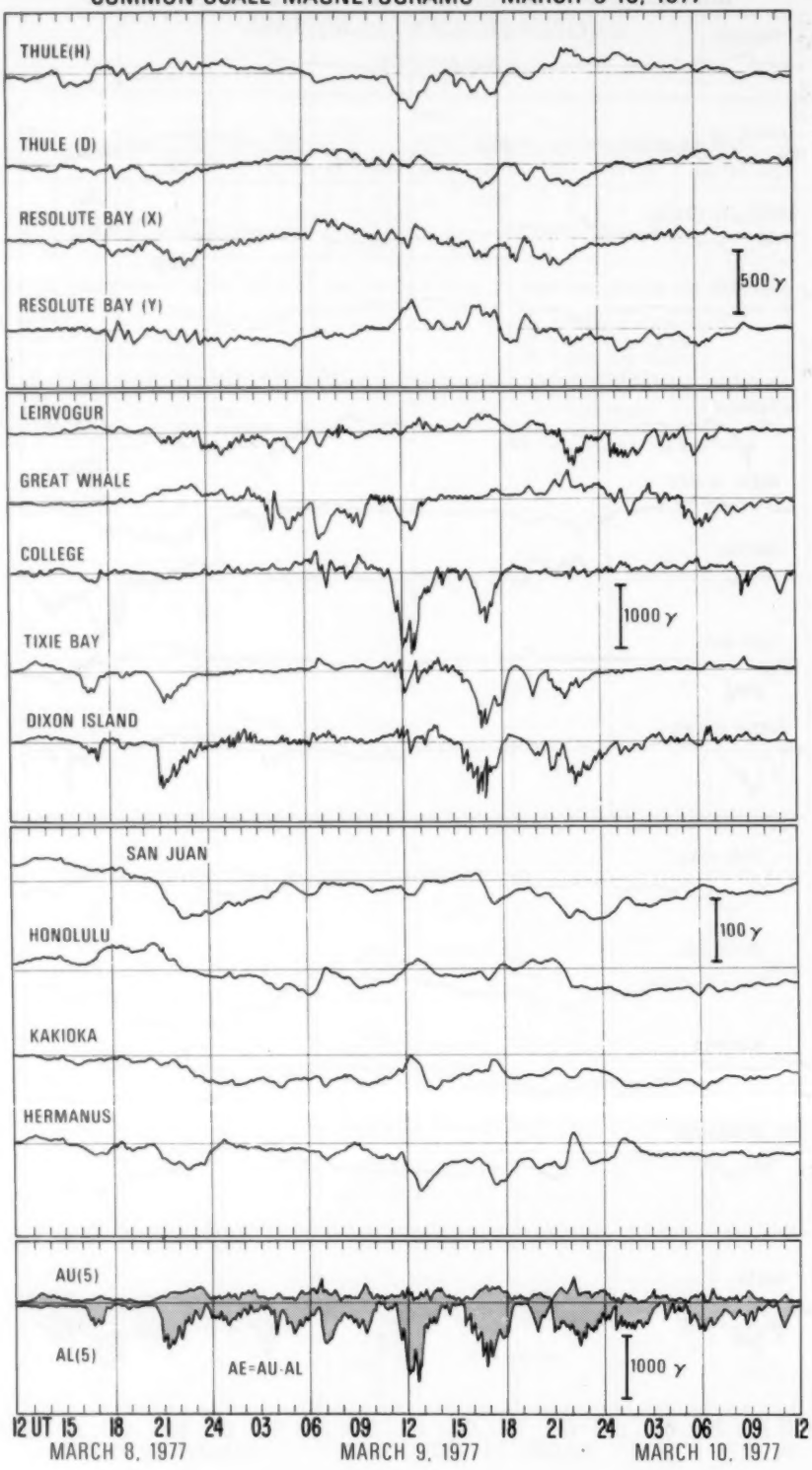
B = Single burst
G = Small group (< 10) of bursts
GG = Large group (> 10) of bursts
C = Underlying continuum (particularly with type I)
S = Storm in the sense of intermittent but apparently connected activity
N = Intermittent activity in this period
U = U-shaped burst of Type III

RS = Reverse slope burst
DP = Drifting pairs
DC = Drifting Chains
H = Herringbone
W = Weak
P = Pulsations
CONT = Continuum
UNCLF = Unclassified activity

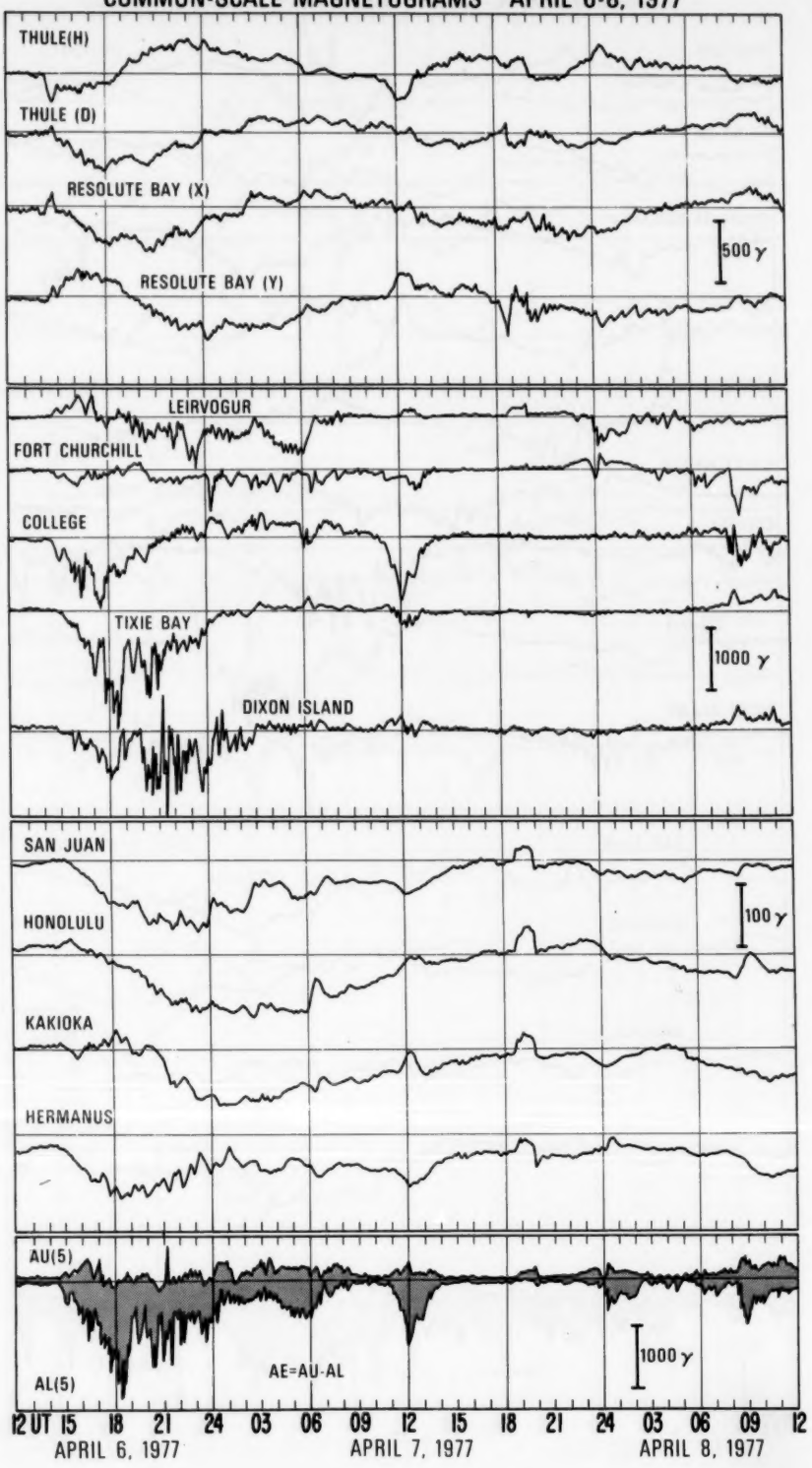

COMMON-SCALE MAGNETOGRAMS JANUARY 28-30, 1977
THULE(H)
THULE (D)
RESOLUTE BAY (X)
RESOLUTE BAY (Y)
500 γ
LEIRVOGUR
GREAT WHALE
COLLEGE
TIXIE BAY
DIXON ISLAND
1000 γ
SAN JUAN
HONOLULU
KAKIOKA
HERMANUS
100 γ
AU(5)
AL(5)
AE=AU-AL
1000 γ
18 UT 21 24 03 06 09 12 15 18 21 24 03 06 09 12 15 18
JAN 28,77
JANUARY 29, 1977
JANUARY 30, 1977

70
Misc
Mar 77

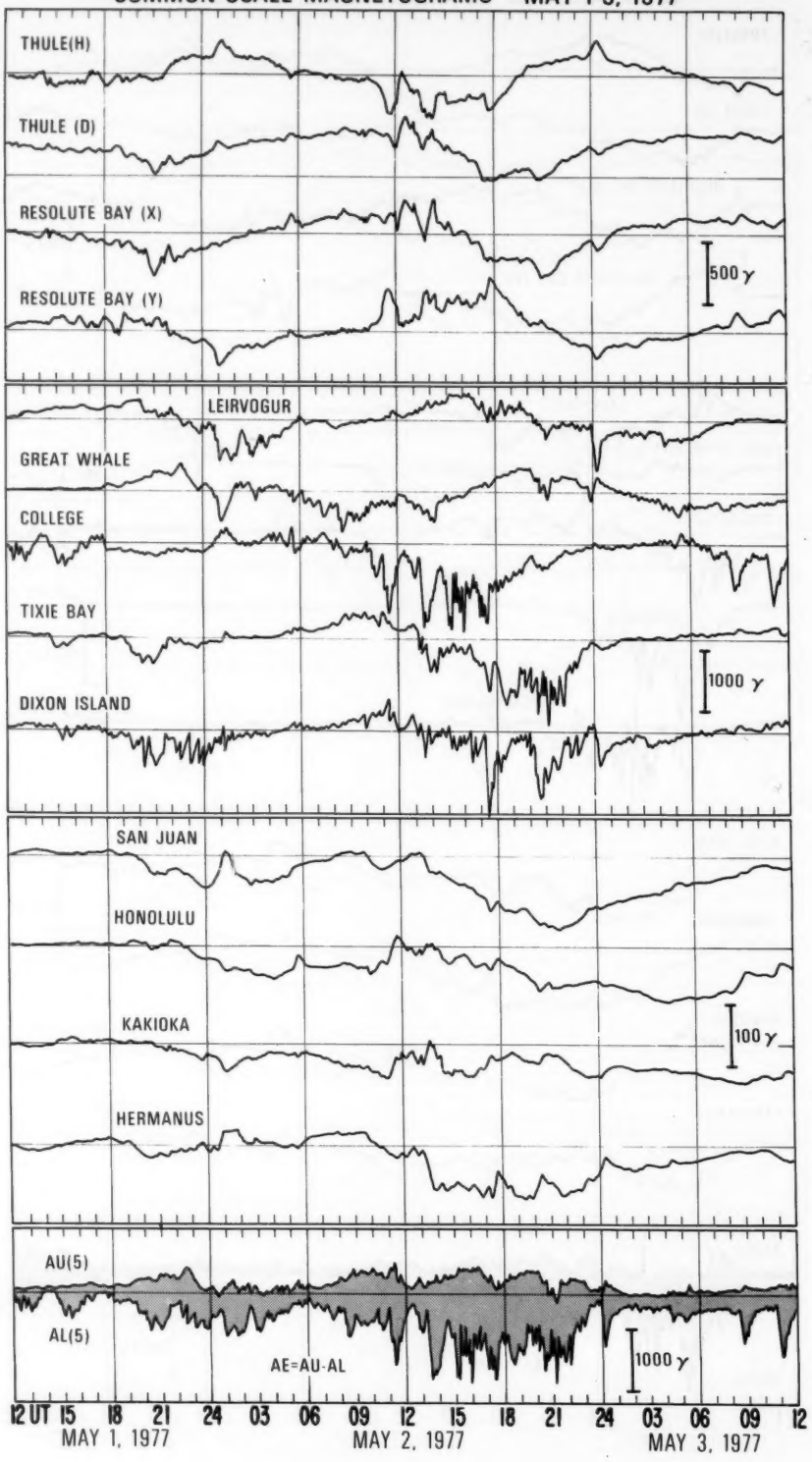
COMMON-SCALE MAGNETOGRAMS MARCH 8-10, 1977

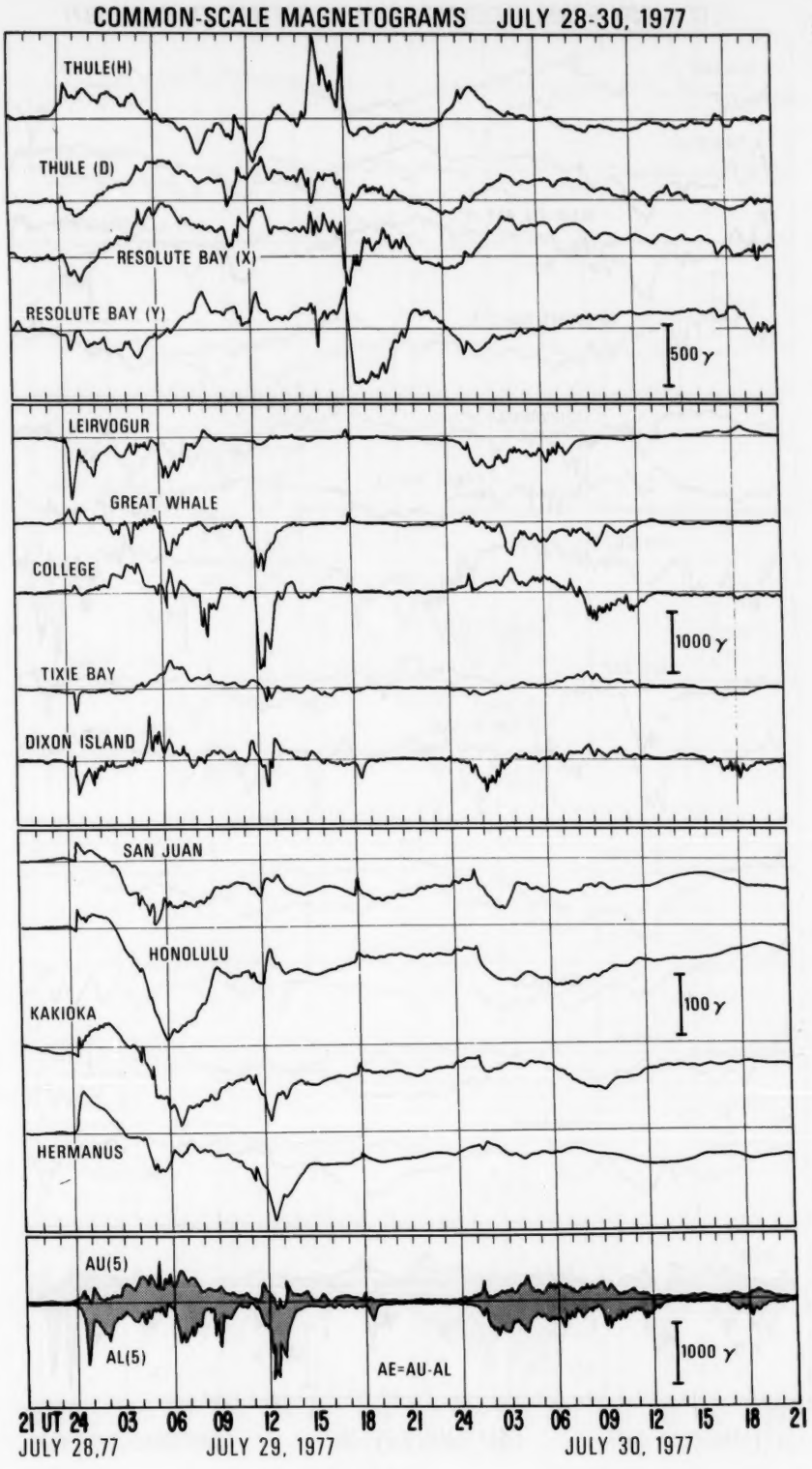


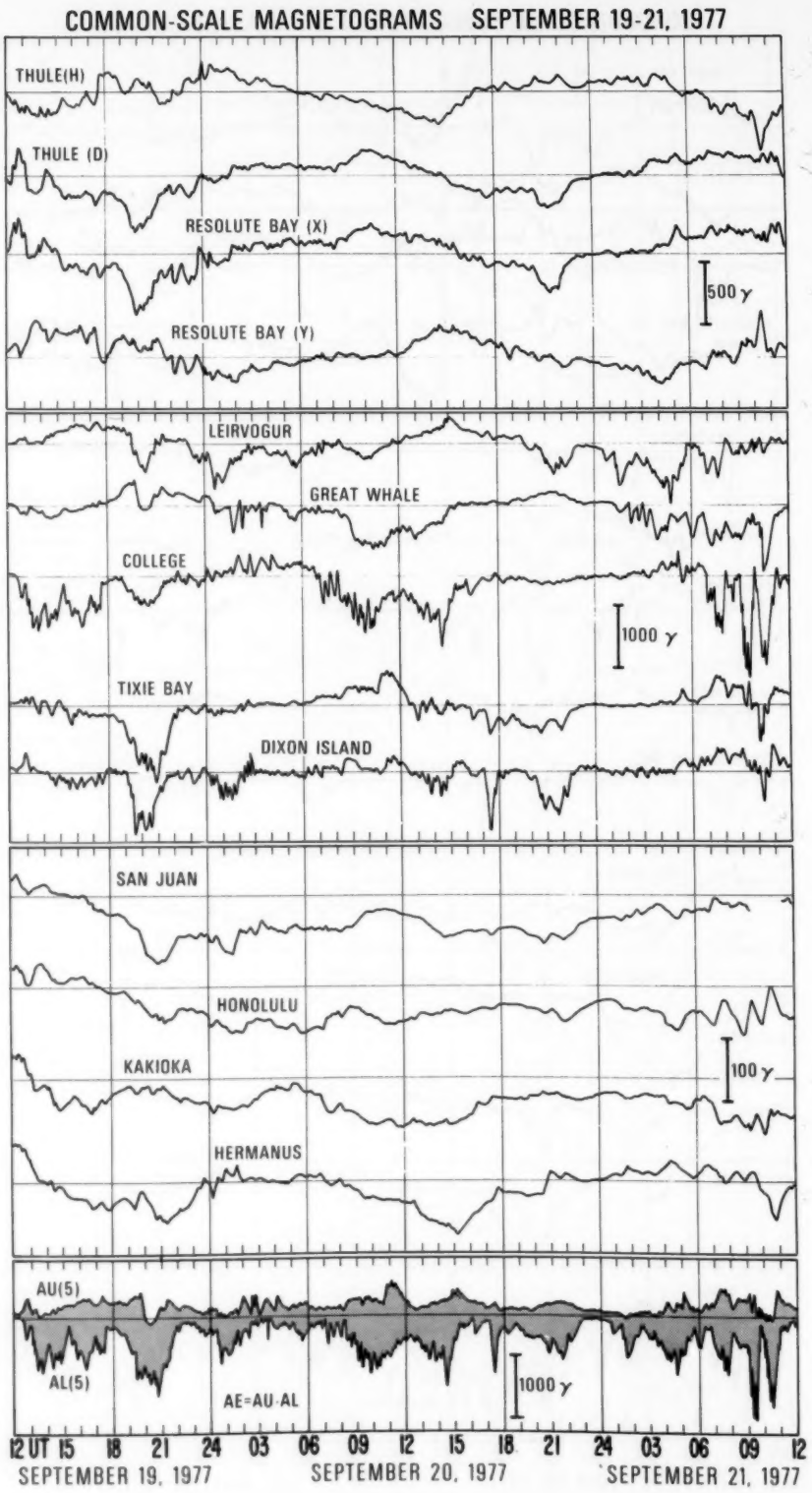
COMMON-SCALE MAGNETOGRAMS APRIL 6-8, 1977



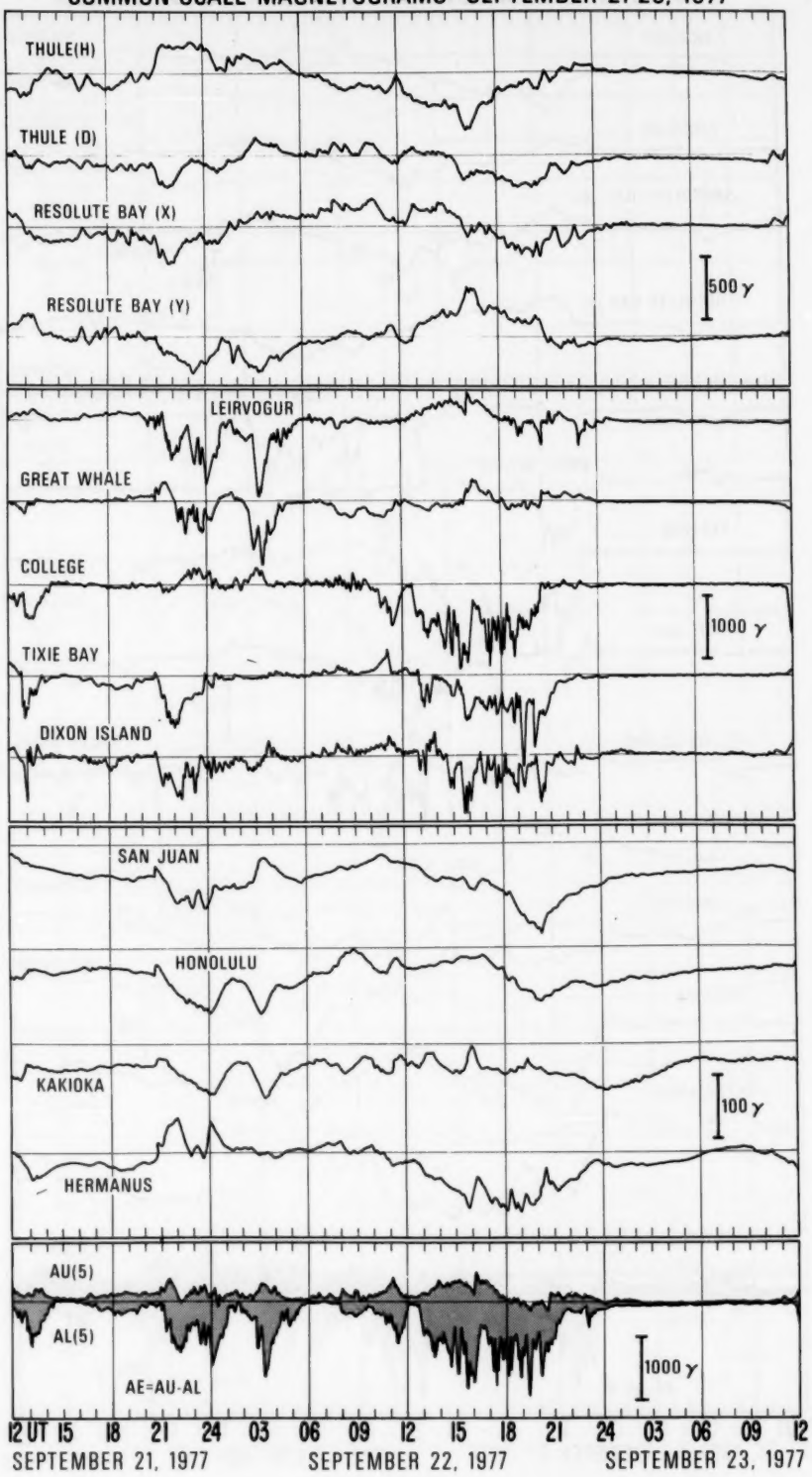
COMMON-SCALE MAGNETOGRAMS MAY 1-3, 1977



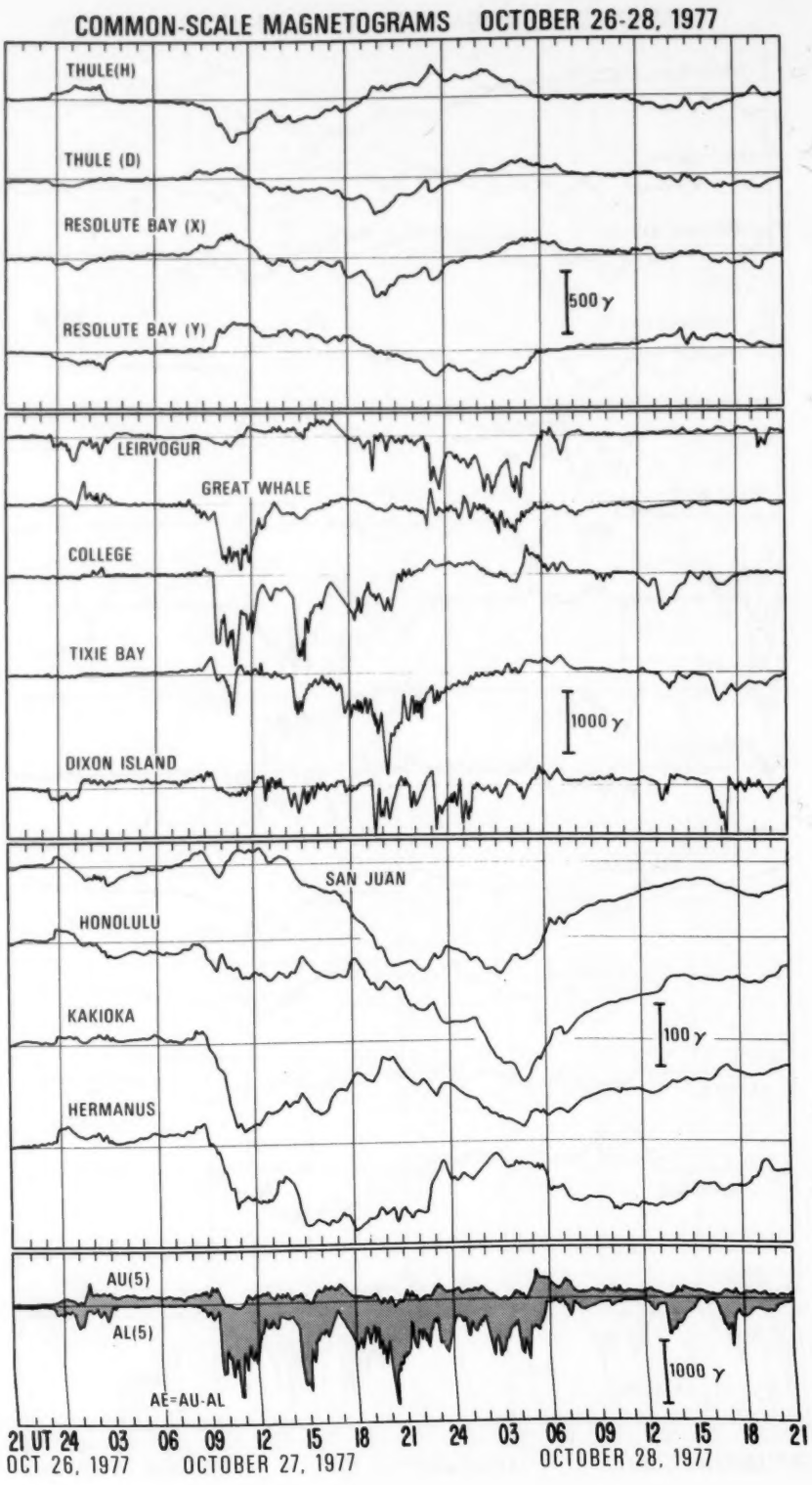

COMMON-SCALE MAGNETOGRAMS JULY 28-30, 1977
THULE(H)
THULE (D)
RESOLUTE BAY (X)
RESOLUTE BAY (Y)
500 γ
LEIRVOGUR
GREAT WHALE
COLLEGE
1000 γ
TIXIE BAY
DIXON ISLAND
SAN JUAN
HONOLULU
100 γ
KAKIOKA
HERMANUS
AU(5)
AL(5)
AE=AU-AL
1000 γ
21 UT 24 03 06 09 12 15 18 21 24 03 06 09 12 15 18 21
JULY 28,77
JULY 29, 1977
JULY 30, 1977


COMMON-SCALE MAGNETOGRAMS SEPTEMBER 19-21, 1977
THULE(H)
THULE (D)
RESOLUTE BAY (X)
500 γ
RESOLUTE BAY (Y)
LEIRVOGUR
GREAT WHALE
COLLEGE
1000 γ
TIXIE BAY
DIXON ISLAND
SAN JUAN
HONOLULU
KAKIOKA
100 γ
HERMANUS
AU(5)
AL(5)
AE=AU-AL
1000 γ
12 UT 15 18 21 24 03 06 09 12 15 18 21 24 03 06 09 12
SEPTEMBER 19, 1977
SEPTEMBER 20, 1977
SEPTEMBER 21, 1977

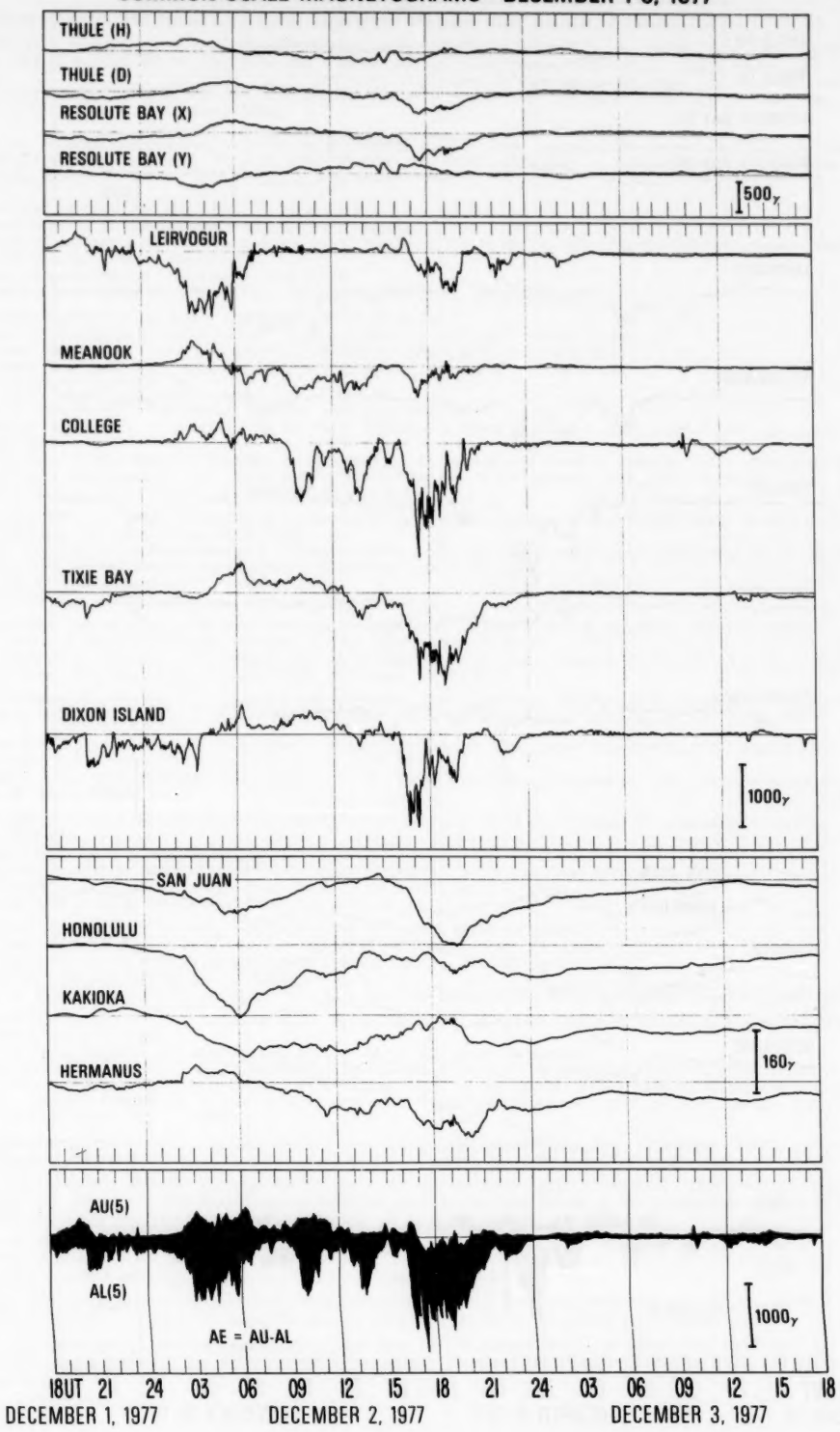
COMMON-SCALE MAGNETOGRAMS SEPTEMBER 21-23, 1977



76
Misc
Oct 77

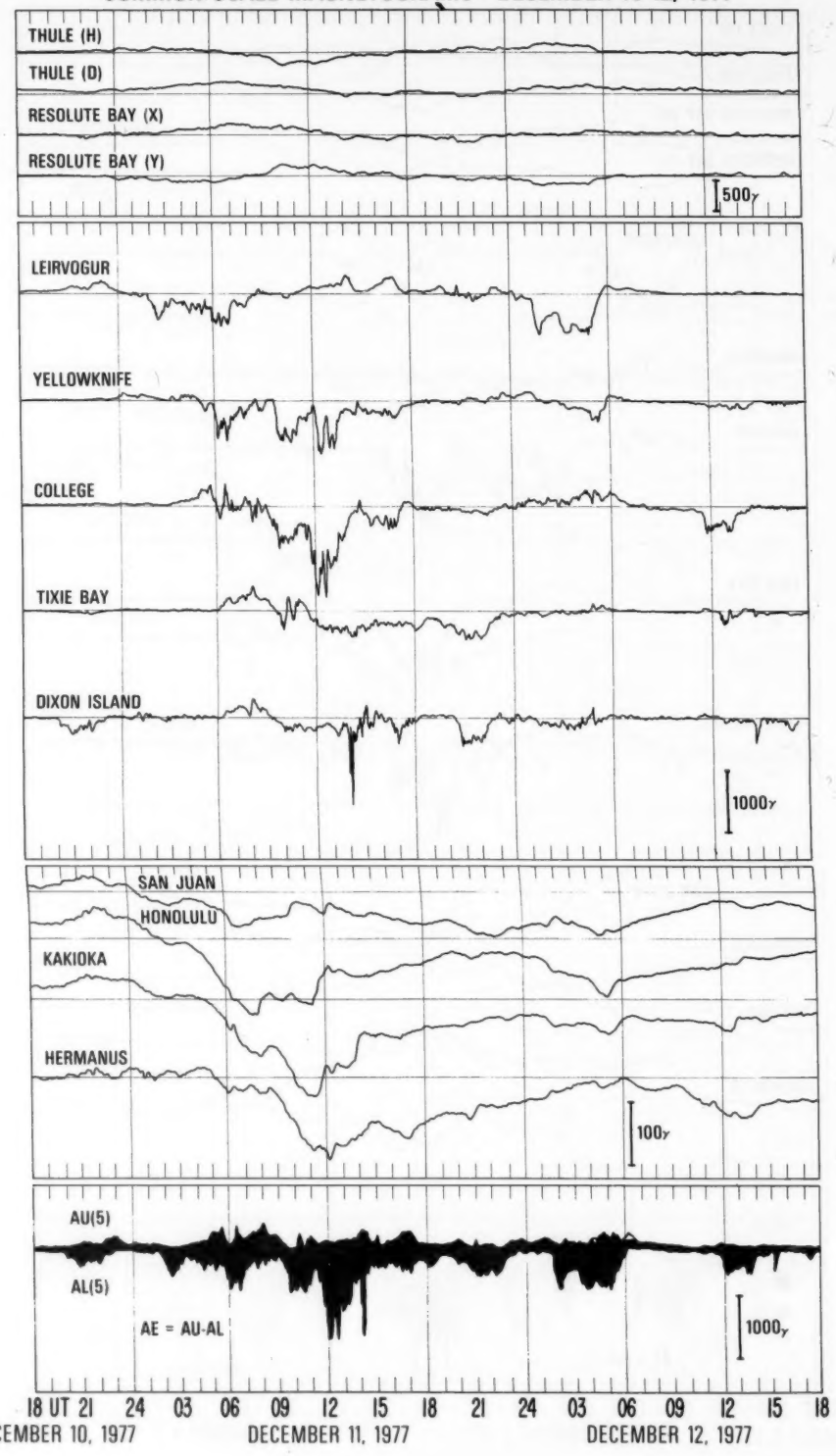


COMMON-SCALE MAGNETOGRAMS DECEMBER 1-3, 1977



78
Misc
Dec 77

COMMON-SCALE MAGNETOGRAMS DECEMBER 10-12, 1977



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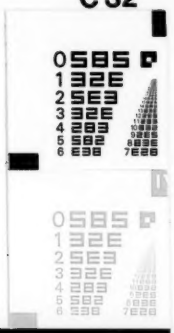
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